

FRIDAY, MAY 3, 1895.

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#### Tools on Locomotives.

#### New York, New Haven & Hartford Railroad, PROVIDENCE DIVISION, April 22, 1895. TO THE EDITOR OF THE RAILROAD GAZETTE:

The recent topical discussion at the New York Railroad Club on the question of locomotive tools developed nothing precisely in a line with what we are doing here. As I have had considerable experience on a locomotive I have had pretty good opportunities to judge of the condition of locomotive equipment when left wholly in the care of the engineman, and think our practice may be of in-

The efficiency of a locomotive, upon the road, is greatly enhanced by having a complete set of the requisite tools in good condition. To attain this end, with the least pos sible expense, our people at this point have deemed it necessary that the enginemen of every locomotive, immediately upon arrival at the engine house, must deliver the following articles, in good condition and care fully wiped, at the store room:

1 red signal lantern, 6 fusees and 8 torpedoes attached, red lantern, 1 white lantern, 1 engine oil (stock) can, 1 valve oil can, 1 screw wrench, 18 in., 1 screw wrench, 12 in., 1 box train numbers, 1 hand hammer, 1 hand chisel, 1 set screw wrench, 1 pail (tools and box of numbers in pail).

Enginemen of departing locomotives, thirty minutes previous to departure, will, upon presentation of check, showing amount of oil required, be furnished with a set of equipment, in good condition; he being held personally responsible for the safe return of the same. Any oil ally responsible for the safe return of the same. Any oil returned in the cans is credited to the locomotive from which it came.

Locomotives in service the entire twenty-four hours must exchange equipment when they draw oil.

At outside engine houses, where two or more locomo-tives are housed over night, sets are left in a secure place under the watchman's care.

We find it the only method that insures a set of equip-ment, in serviceable condition, on every locomotive that leaves the house; and it is an efficient check on the issue as we are enabled to locate the losses and breakages to a man, and with a saving of 40 per cent. in signal oil.

Constant exchanging of equipment insures each lantern being lighted two or three times each week. One day each month the contents of all red lanterns are emptied into the tank. The lanterns are then filled with fresh

We have not had occasion to issue a new lantern, ham mer, chisel, engine or valve oilcan for the past four months, as daily inspection throws defective articles out for repairs.

Train numbers for headlights were a constant source of annoyance and expense-whenever a locomotive wa placed on a strange train the numbers of that train could not been found. The men had been in the habit of keeping them in divers places from the headlight to the back end of the tank. We now have a complete set, well painted, in a box, on each locomotive.

Our issues of new coal scoops are confined to heavy fast passenger and freight locomotives. After a scoop has had three inches worn from the blade we trim it

up and issue to suburban and switching locomotives.

When a locomotive comes into the shop for general repairs everything in the shape of tools is taken off, sharpened and repaired at the expense of the locomotive from which it came and delivered to the storekeeper to be put into stock. When a locomotive leaves the shop she is furnished with a set of tools, in good condition, with movable parts well greased, in which condition they remain for a longer time than one would expe Any request for an article must be accompanied with the old article or such information as will enable the store keeper to recover the same.

instances, when running light, when the only protection for the rear was that of the light from the open firebox door. Six and eight times we have had to trim lights in going 50 miles. One night in particular that comes to ny mind we had been detailed to bring a disabled loconotive to the shop and she broke down on the way. Our third man, a wiper, went back with the red light, the only signal we had excepting the torch. He had been out about ten minutes when we, under the locomotive, heard him up in the cab. He had come in to fix the light, it having gone out. H. D. LYNCH, Storekeeper.

#### The United Verde & Pacific Railway,

CHICAGO, Ill., April 26, 1895.

TO THE EDITOR OF THE RAILROAD GAZETTE

Your editorial on narrow-gage railroads, which refers to my article on the United Verde & Pacific Railway, gs out the fact that I did not say all that could be said in favor of the narrow-gage in that particular instance, although the conditions mentioned enabled the reader to draw some conclusions for himself. It was not the intention in the article to argue the question of gages, but only to set forth the facts as they appeared. I am not an advocate of the narrow-gage in general, but if there are any places where a 3-ft. gage can be justified, in my opinion that is one of them. In the discussion by Foster Crowell, C. E., World's Fair Engineering Congress, Transactions Am. Soc. C. E., December, 1893, to which you refer, Mr. Crowell admitted that there might be conditions which would justify narrow-gage roads in

With the work to be done it is quite possible that the ame weight of rail could have been used with the standard gage although the engine required would have probably been a Mogul, or ten wheel, engine weighing 65 tons (engine and tender loaded). With this additional weight of engine it would probably have been best to use 52 or 56-lb. rail. It is doubtless understood that the reason for using so light a rail is principally on account of the thin traffic. If the rate of curvature was reduced to 20 deg. for standard gage, guard rails would have been required on five miles of curves, making an increase of tons in track material with the same weight of rail. This would contemplate laying additional guard rails to carry the blind drivers of the Mogul engine on all curve sharper than 14 deg.

The additional cost of bridges would not be simply the

acreased width and weight of the structure; chasm crossed would have had a bridge of nearly double the height, thereby increasing the timber work not less than four million feet. Assuming that the weight to be carried on a 12-ft. roadbed could be carried on the standard track on the same bed, it makes some difference if the load is placed almost a foot nearer the center of the grade. The additional expense of maintaining a standard gage on a 12-ft. roadbed, with the earth constantly crumbling away from the ends of the ties, would not be inconsiderable, and would warrant the spending of money for the wider beds. The increase of cost estimated for the standard gage contemplated a wider roadbed as well as lighter curvature. The standard gage road would have been about three-fourths of a mile shorter by reason of the inability to conform to the slopes of the country. On the steep slopes indicated in the article (two to one and three to one) additional width of roadbed would have cost large increase in excavation and embankment.

The questions of transfer and difference of cost in main taining was not considered important for the reasons given. In all probability it would be attempted to run trains somewhat faster on the standard gage than on the sharp curvature of the narrow gage, hence there would be additional expense in maintaining a better condition of the track. The estimate of increased cost of standard gage of 80 per cent. was quite carefully made. It is made apparent in the paper that the traffic would probably never be materially increased. This point was noticed in your editorial and was one of the principal reasons for using the narrow gage. The smelting works are now using all the available water of that vicinity and any larger plant would have to be constructed elsewhere, to which the ore would be hauled. With the present outlay sufficient for doing business the propriety of adding 80 per cent. to the cost is doubtful. E. H. BECKLER.

# Fast Run from Camden to Atlantic City.

The rate of speed made by the special newspaper train that was run from Camden, N. J., to Atlantic City on the morning of April 21 was 76.46 miles an hour, a trifle better than appeared from the newspaper statements on which we based the account printed in the last issue of the Railroad Gazette. Since that issue went to press we have received the official record of the train, as made out under the direction of Mr. A. O. Dayton, Superintendent, and give the substance of it herewith. The length of this road is 58.7 miles, but this distance is counted from the Camden freight terminal, and the distance run by this train, which started from the passenger terminal, was 58.3 miles. The line of this road is quite favorable for fast running, the grades being short and generally not over 20 to 25 ft. per mile, with the exception of two as noted below:

As most of our readers are aware, this road is con trolled by the Pennsylvania, and the engine used on this trip was one of the class "P" described in the Railroad Gazette of Feb. 22, last. It is used in regular passenger the week preceding the special run. The engine is of the American type, four driving wheels coupled, 78 in. in diameter. The cylinders are 19 in. ×24 in., and the diameter. weight of the engine in working order is 122,600 lbs., with about 87,000 lbs. on drivers. It burns bituminous coal and the boiler carries a steam pressure of 175 lbs. per square inch. The size of the grate is  $33.25~{\rm sq.}$  ft., and the

heating surface is 1,583 sq. ft.

The train consisted of one combined passenger and bag gage car, No. 5116, and locomotive No. 1658. It left Camden at 5:35% a. m. and arrived at Atlantic City at 6:21% a. m.; running time 45% minutes. From Liberty Park to Absecon, 49.8 miles, the running time was 371/4 minutes and average speed 79.7 miles an hour; from Berlin to Absecon, 35.6 miles, running time 25% minutes, average speed 82.9 miles an hour; from Winslow Junction to Absecon, 24.9 miles, running time 16 minutes, average speed 83 miles an hour. The fastest mile was made in 41 sec onds, equivalent to a speed of 87.8 miles per hour. This was near Absecon on a grade falling 10 ft. per mile following a short stretch of level track.

Mr. Dayton was on the train and took the time at

Camden and at all the stations. The time between mile posts was taken by D. F. Vaughan, Supervisor, J. H. Nichol, Assistant Engineer, the former calling the

mile posts and the latter noting the time.

Leaving the foot of Federal street, Camden, the track to Haddon avenue station, 1.1 miles, is through the yard of the Pennsylvania Railroad, consisting of a number of sharp reverse curves. From Haddon avenue to the Camden & Atlantic Railroad is a curve of 14 deg 900ft. long, and to Liberty Park, a distance from Camden

of 1.9 miles, is in the built-up portion of the city. To Winslow, 26.8 miles from Camden, the track is largely composed of curves and varying grades. The longest composed of curves and varying grades. The longest ascending grade is passing Lucaston, 28.9 ft. per mile for a distance of 21,600 ft. The longest decending grade is at Atco; being 28.2 ft per mile for a distance of 10,000 ft. On the whole line from Camden to Atlantic City the curves are 29 in number, with an aggregate length of 11.6 miles. The amount of straight track is 46.7 miles; of level track, 14.92 miles. The number of ascents is 37, and their sum is 414.7 ft. aggregate length, 23.33 miles. The number of descents is 32, and their sum is 417.2 ft aggregate length, 20.03 miles. aggregate length, 20.03 miles.

Nine-tenths of a mile from Atlanta City there is a draw-bridge, which requires a reduction of speed to 20 miles an hour, and the speed cannot be recovered before reaching Atlantic City station. The train sheet (condensed) shows:

Distanc	e. Station.	Time.
	Philadelphia (Ferry)	5:30
0.0	Camden	5:35%
1.9	Liberty Park	5:38
	Colling wood	
	Haddonfield	
11.1		5:4516
13.5	Lucaston	5:4716
16.1		5:49%
		5:52
24.5		5:56
26,8	Winslow Junction	5.571/2
30.0	Hammonton	6:00
32.1		6:011/
41.0	Egg Harbor	6:074
51.7	Absecon	6:151/9
57.4	Drawbridge	6:20
58.3	Atlantic City	6::11%

Wrigley's Switch and Signal Movements.

The accompanying illustrations, Fig. 1 and Fig. 2, illustrate a switch movement devised by Mr. J. Wrigley, of Elmira, N. Y., Supervisor of Signals on the Susquehanna Division of the New York, Lake Erie & Western. The aim of the inventor in constructing this apparatus was to pro vide an effective and reliable one which could be made at the least possible expense, and which would be easy to keep in repair. The working parts are inclosed in a box about 12 in. × 24 in., so as to be protected from snow and from ordinary interference. All the parts, except the main shaft and the pins, are made of malleable or common cast iron.

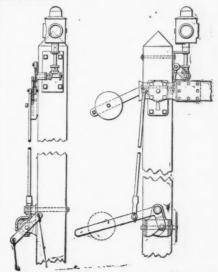


Fig. 3.—Wrigley's Semaphore Lamp Movement

In the illustration the arm 1, at the left hand end of Paramount in the care of a locomotive should come trip was one of the class "P" described in the Railroad the main shaft, receives the connection from the cabin: that of her danger signals. Who among your readers that has served on the "foot-board" but can recall service on this road and made its regular trips during to bar, and the rod, 5, operates the switch. The other rod, 4, is connected to the switch points, and is for the purpose of moving the slide, 3, in unison with the switch. This slide, engaging with the lugs fixed to the shaft, constitutes a lock, making it impossible to move the operating lever home unless the switch rails have been pushed

The distinctive feature of the machine is the motion plate, made in the form of a section of a cylinder, as shown in the center of the drawing. When this curved plate is moved, by means of the crank 1, it actuates the switch by means of the slot and the arm 2. This arm and the beveled lock are shown more clearly in Fig. 2.

The first part of the movement, during which the projection on arm 2 travels through the straight por-

controlled by the National Supply Company. A small pump takes the oil from the tanks and delivers it to a sheet irm reservoir under a pressure of about 40 lbs. per sq. in. An air chamber on top of this reservoir is employed to secure a steady flow of the oil to the burners, and the exhaust steam from the pump passing through a coil placed in the reservoir heats the oil to 150 deg. Fahr., thus insuring a ready flow through the pipes. The speed of the pump is regulated by a reducing valve placed in the steam pipe and actuated by the oil pressure in the reservoir. In the burners the oil is vaporized by a jet of steam. In case it is necessary to use coal for fuel the boilers are provided with the Murphy automatic stoking device, and the boiler-room is arranged for the installa-



-Wrigley's Fig. 1.

tion of the slot, unlocks the switch, the detector bar being lifted simultaneously. In the next succeeding part of the stroke the arm 2 is moved by the diagonal part of the slot and throws the switch; and the straight portion of the slot at the latter end of the stroke locks the

Mr. Wrigley informs us that this apparatus works with great ease. He throws two switches 300 ft. apart with one lever, both switches having long detector bars. With ball bearings he can throw four switches, with 45ft. detector bars.

This apparatus has been in use for over a year on the Susquehanna division of the Erie, and additional orders have lately been given for that division and also for the Eastern division. Its cheapness and simplicity, with the easy detector-bar movement, make it especially suitable

for switches not connected with a tower. Fig. 3 shows the manner in which Mr. Wrigley has ar ranged a signal light for a semaphore in such a way that there need be no glass in the semaphore arm. The lamp is fixed on a vertical spindle which is turned by bevelled gearing, connected with the balance lever in a simple manner, as shown. With this device the engineman shown. need never look through more than one thickness of glass to get the indication, and distinctive back lights



Fig. 2.- Details of Switch Movement,

can be used for both positions of the lamp. signal is located on a sharp curve the cogs of the bevel gears can be shifted a few notches if desired, so as to vary the direction in which the light will show.

This light can be readily adapted to semaphores now in use, and in case it should be desired to substitute green for white as the safety indication, the revolving lamp could be very cheaply changed.

It will be seen that the cabin connections for this sig-nal operate by means of a curved motion plate, similar to that used in the switch movement described above. By cutting the slot in this motion plate with a short straight portion at the end, it becomes a lock, holding the semaphore in the clear position, so that it cannot be moved except by the regular operating wires.

This lamp connection has been used on the Erie a year and a half with perfect satisfaction.

### L'The Power House of the Chicago Electric Transit Company.

The power house recently completed by the Chicago Transit Company is a model in design and equip ment. It is located on Roscoe boulevard near the North Branch of the Chicago River. The building is 245 ft. × 124 ft., and is built of brick with a corrugated iron roof. The front of the building faces on Roscoe boulevard, and is of red pressed brick, having four gables, which are pierced with porcelain insulators through which go the cables for carrying the current to the electric roads. This plant is to supply power for nearly all the trolley lines on the north and northwest sides of Chicago con-trolled by the North and West Chicago Street Railway companies, and also for a portion of the Northwes Elevated Railroad when completed.

The interior of the building is divided lengthwise by a brick fire wall into two rooms, of the same size,  $245\times62$ ft., the south one for the engines and electrical equipment and the north for the boilers. These are Campbell & Zell water tube boilers of 300 H. P. each, and bell & Zell water tube bollers of 300 H. F. each, and are arranged in five batteries with two boilers to a battery, giving a total of 3,000 rated horse power. Crude petroleum is used for fuel, being supplied to the boilers from four large underground storage tanks by a system iron frames.

tion of coal and ash handling machinery. The coal will be lifted by a chain conveyor to the hoppers above the boilers, and the ash handling machinery will be entirely in the basement.

The water supply may be taken either from the city nain or from the river directly, in which case it pas through two Jewell gravity filters of 25,000 gals. an hour capacity into a large reservoir. From there it is taken by Blake pumps, and delivered to the heaters. There are six of these four in the basement of the engineroom, where the heating is done by the exhaust steam from the engines before it reaches the condensers, and two in the boiler-room, heated by the exhaust steam from the condenser and feed pumps. These are so arranged that they can also be heated by the exhaust steam from the engines should they be run non condensing. The loca tion of the feed water pipes permits the use of these After systems of heaters either separately or in series. passing through the heaters the water is sent through the Whitmore-Dean Automatic Electro Feed Water Purifiers before entering the boilers. These are put in to pre vent scaling, and very good results have been obtained. In case of a failure of the feed pumps, injectors are pro vided to supply the water. The condensed steam from the headers, separators, cylinder and receiver jackets is re-

turned to the boilers by steam loops.

In the engine-room are four Frazer & Chalmers cross-compound, condensing, Corliss engines with directly connected Siemens & Halske generators. These engines are horizontal and are rated at 1,000 H. P. each. The steam from the high-pressure to the low-pressure cylinders passes through a heater jacketed by live steam. Jet condensers are employed, one for each engine, and are located in the basement, as is all the piping for the engines. This gives an extremely neat appearance to the gine-room. In case the conder an automatically-opening valve is placed in the exhaust pipe from each engine, so that the steam directly into a large exhaust main and the engines run non-condensing. Arrangements are provided also for admitting high-pressure steam directly to the low-pressure cylinder

A notable feature of the machinery is the automatic oiling system put in by the Wilson-Whiting-Davis Oiling Company. In this system the oil is distributed to all the bearings from a reservoir, in which the oil is under an air pressure of about 15 lbs. per sq. in., supplied by a Westinghouse pump. From this reservoir the oil is carried through a system of piping to all the cups, which are provided with adjustable sight feeds. The waste is returned by gravity to a filter placed in the basement. After passing through this filter it enters large storage tanks, whence it is lifted by the air-pressure to the distributing reservoir to be used again. Auxiliary force-pumps are provided in case of an emergency. Small filters are also placed in the main pipe just below the distributing reservoir to insure the oil being perfectly clean before reaching the bearing. Two systems are here used, one for cylinder oil and one for engine oil. The air pump also supplies compressed air for dusting the generators and switchboard.

The generators are eight pole machines placed in the shaft between the high and low-pressure cylinders. They are compound wound, with internal poles, and Gramme armatures made of copper bars, the outside of which is used for a commutator. Their voltage is 550 and am-perage 845, at 85 revolutions per minute. The wiring is

done from below in the basement. The switch-board is arranged in two tires, the upper or feeder board being located in a gallery on the south side of the engine-room. It contains 40 panels, each having an ammeter, an automatic breaker and a switch. Each of these panels is connected with a section of the trolley lines—about one mile in length, the name and location of the section being put in them. The lower board is on a level with the floor of the engine-room and contains 8 panels, 4 of which are in use. They are employed in handling and regulating the generators, and each contains instruments for one of the four generators The entire swith-board is built of enameled slate held in

Some of the lines supplied with power are across the river from the plant, and a tunnel was dug to get the feeders cross. A shaft connects the tunnel with the basement of the power house and on the opposite side of the river a tower elevates the wires to the level of the poles that dis tribute them. All feeders not crossing the river are run out of the power house over head, being let through the wall on porcelain insulators and running thence to the poles. The return of the current from the rails is provided for by attaching cables to the rails and carrying these cables back to the switch-board. This is also connected to a ground plate, but its use is merely auxiliary.

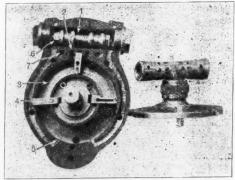
A Walker, 20-ton hand-power traveling crane is in the engine-room to facilitate the handling of the machinery. The whole building is heated by steam and lighted by electricity

Mr. S. Patis, Jr., Chief Engineer of the West Chicago Street Railway Company has had charge of the design and construction of the plant.

### A New Bell Ringer.

Mr. J. R. Pearce, General Foreman of the Kansas City Memphis & Birmingham Railroad shops at Amory, Miss., has patented a bell ringer for locomotives, which consists of a piston with blades like a rotary engine rocking in a cast iron casing, as shown by the accompanying engraving from a photograph. On the top of this casing is the valve chest with bushing removed. The valve of the piston valve type is also shown here, and is actuated

Steam, or compressed air, is admitted to the center of valve, 1, and passes through part 2 into the cylinder 3, forcing the blade 4 around till the port 5 is uncovered. A



The Pearce Automatic Bell Ringer.

portion of the steam passes through this port into the end of steam chest 6, and the valve being balanced forced to the opposite end of steam chest, the steam being exhausted through port 2 and cavity in the valve out of port 7. A stroke in the opposite direction is then

Fig. 8 is the valve chest bushing. The end of the piston rod is connected directly to one end of the bell shaft and the casing fastened to the frame supporting the bell, o cranks thus being ne

# A New Pittsburgh Consolidation Locomotive.

The illustration shows a representative, modern, heavy olidation locomotive for hill work. It is an admirable design, not only in general features, but in details as well It was built by the Pittsburgh Locomotive & Car Works, with their special machinery for boilers, frames, rods and other important details, which permits a class of construction that is high in accuracy and also makes duplication easy. The boiler sheets that are flanged or bent are shaped entirely in hydraulic presses, which reduces the internal strains in the sheets that are the necessary esult of flanging done by mallets.

This engine is running from the Monongahela to the

Alleghany River, on the Pittsburgh Junction Railroad, which connects the Baltimore & Ohio with the Pitts burgh & Western Railroad. The approaches to the tunnel on the hill from the river bottoms are on a grade of 69 ft. on one side and 72 ft. on the other. The freight is principally ore, coal and pig iron.

Two engines of this type have been built for the Pittsburgh Junction Railroad. The following table gives the principal dimensions:

	Weights and General Limensions.
	Fuel. Coke tage of track 4 ft. 8½ in. Total weight of engine in working order 160,000 lbs.
	" on drivers
	Height from rail to top of stack
	Diam. of boiler at smallest ring. 72 in. 23% back head 74% in. Crown sheet supported by radial stays. 1½ diam.
	Stay bolts 1 in. diam., spaced 4 in. from cecter to center Number of tubes
	Trebox inside.   121 in.
	Grate surface
	Total heating surface. 2,318.7 " Dism. of driving wheels outside of tires 50 in.  and length of journals 8½ in. $\times$ 9 in.  of engine truck wheels. 30 in.  and length of journals. 5 in. $\times$ 10 in.
-	Weight of tender with fuel and water. 79,000 lbs. Water capacity. 3,501 U. S. gallons Fuel 380 cu. ft.
	Type of brakeWestinghouse American Automatic

in these boilers, which is in line with the improvement in the diameter of stay-bolts that is gradually in this country. The firebox is 11 ft. long and 3 ft. 6 in. wide, and coke fuel is used. This engine has a great abundance of steam, as might be expected from the size of the boiler, 72 in., and the firebox heating surface, 169.5 sq. ft. The working pressure is somewhat lower than the most recent practice, being 160 lbs. instead of 180.

This engine is working in the service to which the compound system is especially adapted, and one is rather suprised that this locomotive was not made compound. for there is no question about the superiority of the com-pound locomotive for this class of work. However, the next best thing has been done, as the cylinders have been made large enough to give a very considerable pull on the draw-bar with a comparatively short cut-off, that is. with the boiler pressure in the steam chest, the pull on the draw-bar would be about 27,000 lbs. at a cut-off at 1/2-stroke.

It is noticeable that this engine has the length of smoke box recommended by the Master Mechanics' Committee last year, and a taper stack. There are handles on the front bumper and on the smoke box, and the cab arrangements are such as to make the engine more comfort able for the engineer and fireman than most heavy hill engines. The object of using such large engines as this is to do away with double headers and to reduce the train wages per ton of freight.

#### Car Accountants' Convention.

The Car Accountants, en route to their twentieth an nual convention, left Chicago by special train on the evening of April 6, via the Chicago Northwestern, the Union Pacific, the Atchison, Topeka & Santa Fe and the Southern Pacific, and arrived at San Francisco on Monday, April 15, having made stops at several points of in-terest en route. The convention was held at the Palace Hotel, San Francisco, on April 15 and 16. Col. John P. Irish, representing the people of San Francisco, welcomed

It is interesting to note that 1-inch stay-bolts are used | tee appointed at the last meeting to confer with a committee of the Association of American Railway Accounting Officers, concerning the establishment of a system of accounting for the mileage made by the cars of one road over other roads, recommended, as the result of the deliberation of the joint committee, that, so long as mileage continues to be the basis of compensation for the service of interchanged cars, all roads agree to open their records for examination when requested to do so by proper representatives of other companies or by a board of mileage examiners to be appointed by the Association of American Railway Accounting Officers. It was further stated to be the unanimous opinion of the joint committee that the only way to establish a correct and accurate system of accounting for the service and earnings of cars was through the adoption of the per-diem system in lieu of the mileage system. The only portion of this report to which the age system. The only portion of this report to which the convention objected was that the board of mileage examiners be appointed by the Association of American Railway Accounting Officers. The Car Accountants believed that one not familiar with present methods of keeping car accounts would not be likely to discover inaccuracies and that it would be better to have the examiners appointed by the Car Accountants' Association; and this

view of the case prevailed.

The Arbitration Committee, composed of the ex-presidents of the Association, reported that during the past year only two cases in dispute had been referred to it for decision. One of these cases was in dispute between the Central of New Jersey and the New York, New Haven & Hartford, and the other between the Michigan Central and the Canadian Pacific. Both cases covered the ques tion of the obligation of one of the disputants to haul a foreign car homeward empty, it having previously had the loaded haul in the opposite direction. The record in each case showed that the disputed car, after its original loaded movement, had been returned to the home road by a different route, and had again come into the possession of one of the disputants with a load from the home road by an entirely different route. The complainant in each case attempted to send the car home empty by the

after be in the hands of the Car Service Committee. paper upon the per-diem question was submitted by Mr. W. R. Bradley, of the Chicago, St. Louis & Peoria Road, in which he clearly set forth the necessity of bringing the belt lines and terminal roads into any per-diem agreement that may be adopted. Unless they are parties to the per-diem plan upon the same basis as other roads, Mr. Bradley believed it would be difficult to operate it successfully. Such roads receive fair compensation for their services, and why, therefore, should they not become responsible for the prompt return of cars com mitted to their hands?

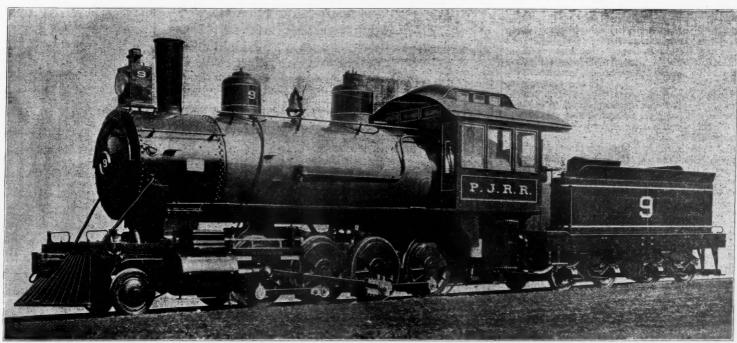
The Committee on Office Methods and Accounting sub mitted an improved system of accounting for the earn ings of cars, and illustrated it by a set of printed blanks and suggested forms, applicable either to the mileage or the per-diem system. The strong point of the commit-tee's report was the recommendation that hereafter junction interchange reports be made to show not only

junction interchange reports be made to show not only the delivery but also the receivals of cars. By so doing missing junction records could be corrected with little trouble and delay, and the number of days chargeable to each road could easily be computed.

Papers were submitted by W. F. Rupp (Allegheny Valley) and J. A. Cavanagh (C., C., C. & St. L.) upon the proper method of handling foreign cars, whether their prompt return home can best be accomplished by the use of home route cards on hymerographum way hills. Those of home route cards or by memorandum way bills. Upon this point the opinion of the members of the association was about as diverse as the opinions of Messrs. Rupp and

Cavanagh.
Mr. J. W. Burnham, of the Fitchburg road, read a valuable paper upon the subject of "Numbering Freight Cars." His idea is to simplify the numbers for each class of equipment and to make the system of numbering and lettering cars uniform on different roads. The paper was referred to the Car Service Committee for investiga

tion and report. Mr. S. H. Church (Pennsylvania Lines) read a paper upon the subject of the growing demand for large size cars. He stated that the official classification placed the



Consolidation Locomotive for the Pittsburgh Junction Railroad Built by the PITTSBURGH LOCOMOTIVE & CAR WORKS, Pittsburgh, Pa.

the Association to the city and to the State, his and address was replied to in behalf of the Association by Mr. W. W. Wheatly of the West Shore road. The opening addresses were followed by a recitation by little Miss Ethel McKay, which was written especially for the occasion by Mr. Barker, chief clerk in the office of William McKay, Car Accountant of the Southern Pacific.

President Beecham then delivered his annual address He dwelt principally upon the per-diem system, and the proposed change in the Master Car Builders' rules of interchange, both of which have for their object the facilitating of the movements of cars. He also touched upon the growing demand for the largest size cars stead of the ordinary standard cars. He thought this demand was caused by the constant increase in recent years by the traffic officials of the minimum car load Perhaps the most interesting part of the President's address, was that referring to certain rumors of fraudulent mileage returns since the last annual meet-ing. These rumors having implicated a certain railroad, President Beecham reported the matter to its Superintendent of Car Service, but with a very unsatisfactory result. The rumors affecting that road have been so persistent and so widely circulated that it was not surprising to hear the matter mentioned and freely commented upon in the convention. No stronger argument in favor of the speedy adoption of the straight perdiem system was ever made than the recent exposures of frauds in reporting mileage.

was refused by connections upon the ground that it had been home since the original outward movement. and that, therefore, the proper home route was via the roads over which it made its last outward movement from the home road. This latter view of the case was sustained by the Arbitration Committee in its report to the association, and the association concurred in that

The Committee on Car Service in its report laid special stress upon the recommendation that the responsibility for the distribution and the prompt and proper movements of cars be placed in the hands of one man on each road, and that he be given sufficient authority to enable him to fulfill his duty. The members of the as believed that much of the diversion and delay of cars on foreign roads was because the officer in charge of car service did not have sufficient authority to control the distribution and movements of cars.

The Committee on Per Diem reported that the senti The Committee on Per Diem reported that the sentiment of the committee, and apparently of a majority of the railroads, was strongly in favor of the adoption of the straight per-diem system. The railroads of Canada were getting ready to put it into effect and were only waiting for the co-operation of other roads. On account of the favorable status of this question in the American Railway Association, assisted by the various traffic associations it was thought uppressent to go into an extended tions, it was thought unnecessary to go into an extended discussion of the per-diem question, as it was well known The roll-call showed that there were present the representatives of 42 railroads, 14 private car companies, and two honorary members, total 58 members. The committentation per diem was discharged, and that subject will here-

same roads that had the original loaded haul, and the minimum carload weights upon some commodities so high that it was impossible to get a sufficient load into cars of our present standards to come up to the minimum weights. Some roads had attempted to satisfy the demands of shippers by building larger cars, until now there had grown up an active competition between the roads as to which should furnish cars of the largest carrying capacity. A resolution was adopted by the association authorizing the President to appoint a special committee to bring this matter to the attention of the traffic officials, and to say to them that it would be in order to revise the official classification.

The election of officers resulted as follows: President, Jas. Oborne (Canadian Pacific); Vice-President, Wm. McKay (Southern Pacific); Secretary, Geo. S. Russell (B., C. R. & N.); Treasurer, J. W. Burnham (Fitchburg); Member of Executive Committee, F. M. Luce (C. & N. W.). The next meeting will be held at Cleveland, O., June 9, 1896,

# Shop Notes at Aurora on the Burlington.

roads have had, for the past much idle locomotive equipment and the Burlington is no exception. At repair points there are many locomotives that must be overhauled before a large crop can be handled, and if the present promise of a heavy corn crop is fulfilled Aurora will be a very busy place by mid summer. The locomotive shops at this point, although small and in need of heavy modern machinery, are in excellent condition, and it is doubtful if there is a shop

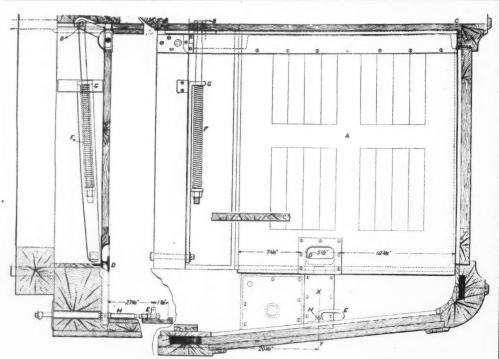


Fig. 1.—Plan and Section, Showing Trap Door for Covering Steps—Wagner Extended Vestibule

in the West where repairs can be made quicker and at a less cost. Many appliances are to be found there for saving time.

One of these is a compressed air jack for putting driving boxes into the jaws of the frames. This device was made at Aurora, and with it one man can do the work of three under the old plan. The flue cleaning and repairing outfit is very complete, and this we have described before in these columns. The heating furnaces are run with oil and iron scrap is worked up into the equivalent of new material as much as practicable. All scrap cannot be worked over directly without in some cases a greater cost than to purchase new material, but it can be put through the scrapping furnace, when separated from the steel scrap, to make hammered iron, and this is done at Aurora. The car shops and paint shop are in excellent condition and ready for the rush of work that must be

met before many months.

The extent to which practical economy has been studied on the Burlington during the recent depression, in the endeavor to save expenses without decreasing efficiency, is illustrated by the recent change in painting locomotive tanks. Ordinarily these tanks are painted with the same care as the locomotive, and sometimes are as carefully finished as passenger cars; that is, the surfaces are filled, and there are three or four coats of paint and varnish. This finish soon becomes dull, and it has seemed a waste of money to finish tenders so carefully for rough service. The new plan at Aurora is to treat the tank just like any other metal structure on a railroad, a bridge for instance, and to cover the iron with some-thing that will protect it from the atmosphere and prevent rusting. The material used appears as well as the

vent rusting. The material used appears as well as the more expensive finish after a few weeks' service.

The mechanical engineering department, which includes the laboratories and testing plants at Aurora, is known to be one of the most complete in this country, and probably one of the most useful, as the results that have been obtained have been of great benefit to the Burlington and to others who have been fortunate enough to learn of the data and conclusions reached.

# Wagner Wide Platform Vestibule.

The engravings show a wide vestibule as now built at the Buffalo works of the Wagner Palace Car Company. It is a pendulum vestibule of the Gould type, the essentials of which were shown in the Railroad Gazette, of March 9, 1894, p. 172. The interlocking of the face plates prevents lateral motion, the top being held against each other by the usual gravity bar.

The form here shown is an extended vestibule, that is, it is carried out to the full width of the body of the car and encloses the entire platform, including the area over the steps. This area is closed by a trap door, and thus the floor space within the vestibule presents an unbroken surface, making the train practically one long car.

The trap, closed down, is shown by the two views in Fig. 1, the one to the left being a section along X, Y. The trap is hinged along the line B, C. It closes with a latch at D, and is released by turning the rod H by means of the hand lever E. This releases the door, which, by means of the compressed spring, F, is forced upward and against the front of the car, leaving the steps open for admission or exit of passengers.

The face plate, diaphragm, buffers, etc., are well shown in the two engravings, Figs. 4 and 5, reproduced from photographs. The head room while passing from car to car is 6 ft. 8 in., and the width between the interior edges of the face plate is 2 ft. 11 in.

The general arrangement of the vestibule and platform is shown in the end and side elevations in Fig. 2. As is seen the vestibule doors have large glass windows

18 × 60 in., making the vestibule very light.

Fig. 3 shows the general arrangement of platform and draft gear. The buffer springs, B, B, have been moved outward from their usual position over the safety chain springs, A, A, in the Gould platform, to allow for the increased width of buffer plate. The same draft rigging is used as with the usual form of vestibule. The emergency spring is shown at C.

## The Proposed Minnesota Canal.

Two years ago the Minnesota Canal Co. was organ ized at Duluth, Minn., to carry out an enormous work in utilizing the water power at the western end of Lake Superior, and to sur ply to the cities of Duluth and Superior water power at a low cost, which it was believed could be made \$10 per H. P. a year. Henry C. Spaulding, an hydraulic engineer of experience, is the President and Manager of the company, and Chicago interests will furnish the money.

The first plan of the company was to dam the The first plan of the company was to dam the St. Louis River at a point 34 miles from Duluth, and convey the larger part of its water from there to the top of the bluffs back of the city in an open canal, which would débouch into a reservoir 610 ft. above the water front of the city. The water was then to be piped down the hill, and conveyed to factories along the water front in lateral mains, which were to be tanged, and the power used direct, and also constants. tapped, and the power used direct, and also converted into electricity and used for all purposes. It was to be conveyed across the harbor to Superior by electricity. Of this 34 miles, 8 miles was to be in the valleys of water courses, and the rest was to be artificial. To save the waters in time of floods and for use when there were droughts the company had ample plans, both along

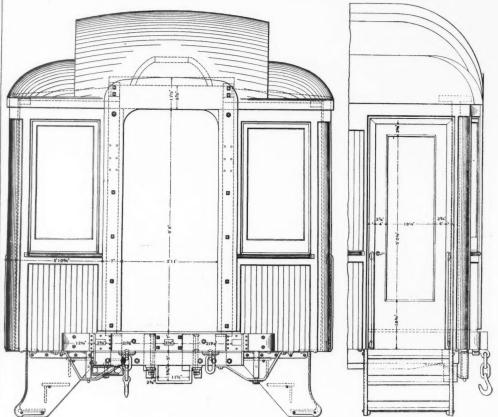


Fig. 2.-End and Side Elevations-Wagner Extended Vestibule.

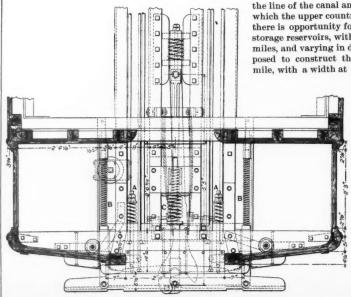


Fig. 3.-Plan of Platform and Draft Gear-Wagner Extended Vestibule

the line of the canal and in the swamps and lakes with which the upper country is filled. It is estimated that there is opportunity for the construction of about 500 storage reservoirs, with a total area of over 2,000 square miles, and varying in depth from 10 to 60 ft. It was proposed to construct the canal with a slope of 2 in. per mile, with a width at bottom of 20 ft., and a depth of 15 ft., so that it might be used for navigation if necessary, as

was believed to be practicable

was believed to be practicable by the projectors.

The flow of the St. Louis River was found, on measure-ment, to be most variable; indeed, the difference be-tween flood and low water, was startling. It was shown that at the dryest seasons the flow sometimes reached the minimum of 250 cu. ft. a second, while in the spring months it was as great as 17,000 ft. in the same time. The full flow of the stream, when properly equalized, was to be passed through a canal 120 ft. wide at the surface, 20 ft. deep and 40 ft. wide at the bottom, but for the

present the company did not expect to make the canal larger than given first above

In considering the subject and carrying on its investigations, the company became convinced that there was the possibility of utilizing the streams that flowed down the Lake Superior slope along the north shore, east of Duluth, especially as difficulty was found in getting the concern that has the water rights for the St. Louis river to relinquish any of its privileges. Surveys were made along the north shore of the lake, and it was found that in the 100 miles directly to the northeast of Duluth there was greater flow of water and less varies. Duluth there was greater flow of water and less variano vested right to interfere. the company turned its attention to these streams, and has surveyed and platted a canal like the other, for 86 miles along the north shore, on the slope of the lake

seller until the purchase price is fully paid. This act went into effect March 2. Senate bill No. 363 amends ction 2543 of the laws of 1889, so as to permit railroads building bridges to build, in connection therewith, a toll bridge, and to charge reasonable rates of toll therefor House bill No. 326 revises section 2603 of the laws of

1889, providing for carrying men in charge of live stock on freight trains. A caboose must be provided, which must be run to the actual place of unloading, and every such caboose must have a toilet room; penalty for non compliance \$100 a day.

House bill No. 625 amends the laws for taxation of cars not owned by the railroad companies operating the Private car companies, etc., must report to the State Auditor yearly the mileage of their cars in Missouri, with a statement of the average mileage per day of each class

makes it apply to car manufacturers and companies using or leasing cars to be put in use in Nebraska. Locomo-tives, including yard engines, must have driver brakes, by the date mentioned. It will be unlawful to run a train after the date named that has not a sufficient number power brakes, so that the engineman can control the train without requiring the brakeman to go between the ends or on top of the cars, as now, to use the common hand brakes. Every railroad company, car company and railroad builder must, in its annual report to the state Railroad Commissioners, state the number of engines and cars used in the state and how they are equipped. Section 6 provides for a penalty from \$500 to \$1,000, and excepts "cars received from railroads other than those of Nebraska which are engaged in interstate traffic." Any employee injured by the running of a car contrary to this law shall not be considered as waiving his right to recover damages by continuing in the employ of the company. No railroad shall be punished for any violation of the law of 1891 heretofore committed. A bill approved April 8 provides regulations for car trust contracts, similar to those recently enacted in Missouri, as reported in these columns. Such a contract, duly filed, and complying with the regulations of the law, may lawfully stipulate that the title to the property

1891 on the same subject, and the phraseology of the act

shall not vest in the purchaser until the purchase price shall be fully paid. Contracts heretofore made may be recorded under the act if the conditions are complied with. The law of Feb. 19, 1877, amended Feb. 27, 1879, is repealed, so far as it is inconsistent with this law.

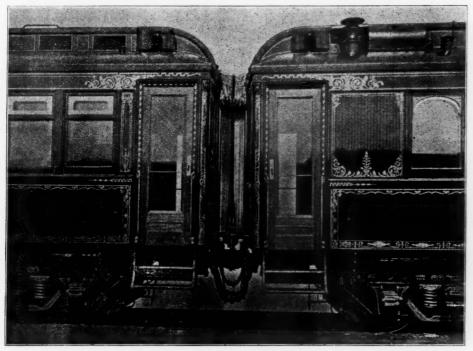


Fig. 4.-Wagner Extended Vestibule.

watershed. It has begun condemnation proceedings for of cars. Railroad companies must make a similar report the land needed for this canal, and says it will proceed of private owners' cars. The intent of the law seems to the land needed for this canal, and says it will proceed to its construction at the earliest possible moment. The available part of this lake watershed extends in Minne The sota for more than 100 miles along the northerly shore of Lake Superior, and varies from 10 miles in width, at its western end, to about 60 at the eastern. It has an average width of more than 30 miles. Its summit ridge lies from 800 to 1,200 ft. above the lake, and down its sides, into Lake Superior, flow more than 30 considerable streams, with over 150 branches

Up to this time this company has succeeded in survey ing a total length of 120 miles of its canal, including the 34 miles of the St. Louis Canal. It has bought considerable lands for rights of way and dam purposes, and has under condemnation almost the entire length of the canals. It has secured legislation wanted, and has defeated a rival company that promised it no little inconvenience. Further than this it has not gone, so far as the public can determine. There have been statements that it has financed the scheme, but these appear to have been without foundation, as they were certainly without au-thorization. It is not believed that the project will re quire more than \$4,000,000 for its full completion, though the stories tell of \$12,000,000 having been secured.

# Railroad Legislation in Arizona.

The Legislature of the Territory of Arizona at its recent session passed only one law affecting railroads. It is House bill No. 60, and is to encourage the construc tion of new lines by exempting them from taxation Every company filing its intentions before March 20, 1896, and beginning work within six months after filing, shall be exempted from taxation upon its property until March 1, 1905; the shares of the stock of the company shall also be exempt. New road must be built at the rate of at least 20 miles a year until completed, as described in the articles filed. The law also applies to extensions of roads now existing, and railroads which are now exempt from taxation by virtue of previous laws may build new lines, which shall be exempt without the filing of intentions, provided the main line (already authorized) shall be put in operation by July 1, 1896, and provided the proposed extension shall be put in operation by March 20, Allowance of time is to be made in case a road is delayed by failure to secure right of way through any Indian reservation

# Railroad Legislation in Missouri.

The legislature of Missouri which adjourned early in April passed eight acts affecting railroad interests. ate bill No. 35 provides for filing and recording car trust contracts in the office of the Secretary of State. By complying with the regulations for such record, and placing proper marks on cars or engines sold, leased or hired, the parties in interest may lawfully make a contract in which the title to the property shall lie with the be that from the average mileage thus reported for each kind of cars (throughout the country, or wherever the cars travel), the state assessors are to estimate how many cars it would have taken to make the mileage actually performed in Missouri, and base the assessment thereon. The assessors must harmonize the statements of different railroads as well as they can. The tax is to be 2 per cent. House bill No. 682 empowers the railroad commission-

ers to order joint station buildings erected at points where railroads cross each other. House bill No. 686 requires a resident corporation to be named as co-trustee in cases where a foreign corporation is named as trustee in deeds of trust and other conveyances. House bill No. 828 regulates the construction of electric wires at railroad crossings. They must be 22 ft. above the top of the rail and have suitable guard wires. A section of this law requires street railroad cars to stop before crossing a railroad at a distance of not less than 10 or more than

House bill No 379 relates to train robbing and is as

Any person who shall place upon any railroad track any obstruction or explosive substance, or shall remove, displace or injure any rail, tie, switch, frog, bridge or trestle, with the design of robbing any person, passenger, employee, agent or company, on any railway train, engine, tender, car or coach, on any railway in this state, or who shall in any way stop, detain or arrest the progress of any such train, car, engine, tender or coach with the intent to commit robbery thereon, or, having in any way entered any car, coach, tender, engine, express car, mail car, or other apartment of any such train, shall there rob any person or persons, employee, passenger or agent, or any express company or mail-pouch or car, of any money or valuable thing whatsoever, either the property of such person, agent, passenger or employee, or the property of another in his care or custody, shall be guilty of a felony, and on conviction shall be punished by death or confinement in the penitentiary for a term of not less than 10 years.

One of the most prominent bills before the legislature this year was one to define who are fellow servants, the main provision being, substantially, that hazardous business a supervising employee should be regarded as a vice principal and not a fellow servant; but this bill failed. The brotherhoods and other organiza tions working in the interest of "labor" have tried for several years to secure the passage of some law of this kind, and there is so much criticism of the legislature for taking no decisive action that the Governor has called an extra session, which was appointed to meet April 23.

# Railroad Legislation in Nebraska.

The legislature of Nebraska has passed this year two bills affecting railroads, copies of which we have received, through the courtesy of Hon. J. A. Piper, Secretary of State. The first one, approved March 30, requires the railroads of the state to use automatic couplers and State. The first one, approved March 30, requires the railroads of the state to use automatic couplers and brakes after Jan. 1, 1898. This is a revision of the law of

#### Railroad Legislation in North Dakota.

The legislature of North Dakota, which has recently djourned, passed seven acts affecting railroads the pamphlet edition of these laws, published by the Bismarck Tribune, we summarize the main features of the acts referred to. The first one, House bill No. 65, is a long chapter for the establishment of drains; section 19 of this law permits drains to be laid along any rail road when necessary, but not to the injury of the railroad; and where a drain crosses a railroad the company

must make the necessary opening and bridge.

H. B. No. 8 repeals the gross earnings tax law of 1889, but the repeal is not to have any effect on the assessments for 1894. H. B. No. 23, approved March 4, requires railroads to build a station house and keep an agent the year round at all places where enough freight is shipped to bring in earnings of \$40,000 a year.

Senate Bill No. 48, approved March 21, prescribes maximum rates for the transportation of coal.\* For five miles or under the rate must be 30 cents a ton; 30 miles, 59 cents; 100 miles, 98 cents; 150 miles, \$1.18; 200 miles, \$1.38; 300 miles, \$1.74: 400 miles, \$1.96. The penalty for violation of this act is \$25 a day, to be recovered by any

person prejudiced or suffering damage. S. B. No. 152 provides that the boards of directors of private corporations may meet either within or without

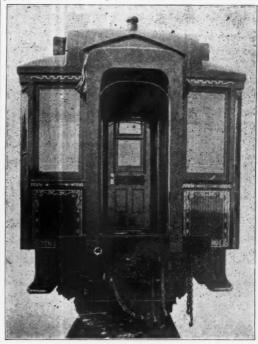


Fig. 5.—Wagner Extended Vestibule.

the state, provided one director resides in the state, when the corporation has within the state an agent upon whom service may be made. S. B. No. 166 requires railroads to stop off a carload of freight short of destination on payment of \$5, but not more than one stopover is allowed; and if the delay is more than one day \$5 additional may be charged for each day. The law does not apply to perishable freight.

H. B. No. 64 is to compel railroad companies to provide two brakemen to each freight train of 45 cars, and an ad ditional brakeman for every 10 cars in excess of 45; but the law does not apply if the train has enough air brakes for ordinary stops

#### A New Coaling Station for Locomotives.

At Fargo, N. D., a very large locomotive coaling station has been recently completed by the Northern Pacific Railroad Company. The general design is by Mr. E. H. McHenry, the Chief Engineer of the road, and the system employed is the Dodge conveyor made by the Link Belt Companies, who within the past two years have erected several stations with these conveyors for

Mari

which transmits the pressure through a small pipe to conveniently located pressure gages. By this means the amount of coal supplied to each engine can be accurately measured, and this device would prove very advantageous to railroads which keep a record of the coal used by

About 30 H. P. is used to operate the plant when all the conveyors are running. The power is transmitted

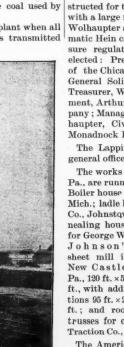


Fig. 3. - Cross Section

Fig. 1.-Northern Pacific Coal Storage Plant, Fargo, North Dakota-End View.

the New York Central & Hudson River Railroad. These stations at Croton, N. Y., Lyons, N. Y., and East Albany, N. Y, are somewhat similar to the one of the Philadelphia & Reading Railroad at Lehigh avenue, Philadelphia, described in the Railroad Gazette May 13, 1892, and differ from the Fargo station in providing a comparatively small amount of coal storage, carrying it only in elevated pockets. At Fargo, however, owing to the liability of snow blockades in winter and to the distance the coal must be hauled, there is provided a storage capacity of 3,500 tons in addition to the pockets. We de scribed in the Railroad Gazette for Oct. 26, 1894, a plant erected at West Superior, Wis., for the Lehigh Valley Coal Co. by the Dodge Coal Storage Co. The machinery for this plant was also furnished by the Link Belt Companies. The ca acity of the plant is 145,000 tons.

Mr. McHenry, in speaking of the Fargo station, says: "This is the one coaling station which combines economy in storage and economy in handling of coal. All plants of which I have any knowledge fail to fulfill these conditions; if the cost of the structure per ton of storage is low, the cost of handling the coal is high and vice

Fig. 1 shows an engraving from a photograph of the end of the conveyor; Fig. 2, the side, and Fig. 3, a cross-section. The Dodge chain, which has malleable iron bearing blocks, between the links between each articula-tion, is used. To this chain are attached peculiarly curved steel flights or scrapers which draw the coal along in steel troughs provided with conveniently located valves or gates, to permit the discharge of the coal at devalves or gates, to permit the discharge of the coal at desired places. An engraving of this chain showing the bearing blocks and scrapers is given in the Railroad Gazette of 1892, page 348. The Dodge conveyor is used at all the larger anthracite collieries in Pennsylvania.

The coal arriving at the station is delivered into the hopper shown on the extreme right of Fig. 1. From here it is carried by a conveyor below the level of the ground, and at right angles to the track, which conveyor is not shown in the engraving and delivered into either of the

and at right angles to the track, which conveyor is not shown in the engraving, and delivered into either of the inclined conveyors. The one on the right delivers coal into the storage hoppers and that on the left into the coaling chutes. What appears to be two inclined conveyors is in reality but one continuous chain running around horizontal wheels, the direction of it being reversible at will. It will be observed that the coal can be carried directly from the cars to the coaling chutes with carried directly from the cars to the coaling chutes with-

out going into the hoppers at all.

Fig. 3 shows a cross-section of the completed storage pile. The coal is contained in two hoppers, extending lengthwise of the plant, and set partly in the ground. Beneath these hoppers is a reversible horizontal conveyor covered with loose planks. By successively removing those at the face of the pile, the coal is allowed to flow into either run of this conveyor which discharges into the short lateral conveyor previously mentioned. This in turn delivers it to the inclined conveyor running up and over the coal chutes.

and over the coal chutes.

At present there are 10 of these automatic chutes, with the provision to increase their number when necessary. To each of these is attached a very ingenious device designed by Mr. McHenry which accurately weighs the coal in the chute. This is done by resting the chutes

by manilla rope from a point 800 ft. distant. The distribution of it to the various conveyors is effected by the same means. The entire plant covers a space 230 ft.  $\times$ 76 ft. The conveyors have a capacity of 120 tons per hour of run of mine coal. The machinery was furnished by the Link-Belt Machinery Co., at Chicago, and the plant erected under their supervision.

# TECHNICAL.

# Manufacturing and Business.

good many of the large plants in Chicago now using oil for fuel are contemplating returning to the use of coal.
This is because the Standard Oil Co. has given notice that its contracts will not be renewed on the present basis

upon the top plate of a small chamber filled with a fluid, to deal in railroad specialties, by a number of Chicago capitalists, has just completed its organiza-tion and elected officers. The company's offices will be in the Owings Building, Chicago, where the entire ninth floor has been rented and is now being reconstructed for the company. The company begins business with a large number of important devises, including the Wolhaupter arch and girder tie plate, the double automatic Hein car coupler and probably the air brake pressure regulator. The following are the officers just elected: President, D. S. Wegg, until recently President of the Chicago & Northern Pacific Railroad, formerly General Solicitor of the Wisconsin Central Company; Treasurer, W. E. Duncombe; Manager of Sales Department, Arthur Crandall, formerly of the Q. & C. Company; Manager of Engineering Department, Benj. Wolhaupter, Civil Engineer, whose office has been in the Monadnock Block.

> The Lappin Brake Shoe Co, has recently moved its general offices to 39 and 41 Cortlandt street, New York.

> The works of the Penn Bridge Co., at Beaver Falls, Pa., are running full and with the following contracts: Boiler house for the Crescent Mfg. Co., at Muskegon, Mich.; ladle house and mixer house for Cambria Iron Co., Johnstown, Pa., for its new process steel plant; an-

for George W Johnson's sheet mill in New Castle, Pa., 120 ft. ×51 ft., with additions 95 ft.  $\times$  25 ft.; and roof

trusses for car barn and power house of the Clearfield Traction Co., at Phillipsburg, Pa., buildings 50 ft. × 380 ft.

The American Signal Co., of Baltimore, has started the foundation for a new factory building at Thurmond, Md. It was intended at one time that the company's plant should be erected at some other town, but the officers finally decided to have it remain at Thurmond and to increase its size. The company has a considerable number of orders for its signal bells and expects to have its enlarged plant very busy.

The Board of Directors of the Westinghouse Electric & Mfg. Co., inspected the new plant at Brinton Station on the Pennsylvania Railroad last week. The directors' party included: Charles Francis Adams, Brayton Ives, President of the Northern Pacific Railroad; Marcellus Hartley, of New York; August Belmont, New York; Mr. Bumstead, Boston; G. W. Hebhart, President of United States Electric & Power Company, of New York; A. M. Byers and George Westinghouse, Jr.; of Pittsburg. Officers of the Philadelphia Company and associated Westinghouse interests were present.

Receivers H. A. V. Post and Thomas Carmichael, of the Hicks Stock Car Co., announce the following appointments: General Manager, B. C. Hicks; Traffic Manager, T. A. Whitmore; Auditor, C. E. Braden; Superintendent, Joseph Baker.

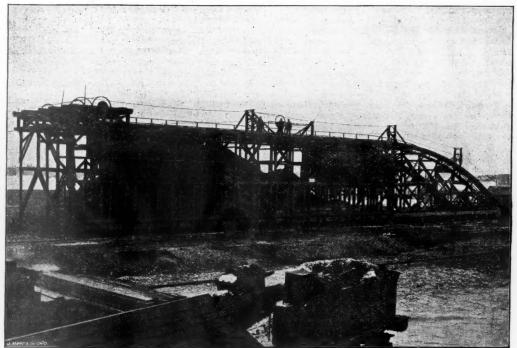


Fig. 2.-Northern Pacific Coal Storage Plant, Fargo, North Dakota-Side View.

owing to the rise in price of oil, and also because coal is selling at an extremely low figure now

The Water Works Department of the city of Cincinnati, recently awarded a large contract for cast-iron pipe to the Addyston Pipe & Steel Co., at \$22.95 a ton. Other bidders were the Anniston Pipe & Foundry Co., the Chattanooga Foundry & Pipe Works, the Howard Har-rison Iron Co., and Dennis, Long & Co.

The Brown Hoisting & Conveying Machine Company is now erecting a 25-ton 3-motor electric traveling crane of 113ft. span, at the Brilliant pumping station, Pittsburgh. The crane will be used in replacing some of the engines at the works with new Allis engines and in making general repairs. The total vertical clearance of the crane is only 4 ft. 11 in., and because of this peculiar feature Chattanooga Foundry & Pipe Works, the Howard Har-ison Iron Co., and Dennis, Long & Co.

The Railroad Supply Co., of Chicago, recently formed

The Railroad Supply Co., of Chicago, recently formed

of erecting this crane will be done without stopping any

The Link Belt Machinery Co. is now equipping the North Chicago Street Railway Co.'s new power house at Hawthorne avenue and Hobbie street with nine standard water tube safety boilers. The aggregate capacity of the boilers will be 3,000 H. P. Among other plants the company is equipping with the same boilers are: Fabacher Brothers' Hotel, New Orleans, La., 150 H. P.; Marten & Van Oven, Naperville, Ill., 100 H. P., and the city of Independence, Ia., 200 H. P.

In addition to the bridge work now under contract in the shops of the Youngstown Bridge Co., the company has orders for the steel building girders and columns for the smelter works at Anaconda, Mont., and the boiler house of the American Tin Plate Co., at Elliott, Ind.

The Bucyrus Steam Shovel & Dredge Co., of South Milwaukee, Wis., has just received an order from the Boston & Albany Railroad for one of its special "O' steam shovels, and a steam shovel of the same type has also just been ordered by the Mahoning Iron Co., which operates in Northern Minnesota.

The new plant of the Safety Car Heating & Lighting Co., which is to supply Pintsch gas to the roads entering Houston, Tex., is now practically ready to supply the gas. Contracts have already been made with the South ern Pacific, the Houston & Texas Central, Missouri Kansas & Texas, and the Houston, East and West Texas for the Pintsch gas.

The Consolidated Cattle Car Co., with chief office as East St. Louis, has just been organized, with Edward S. Robert, E. E. Smith and Daniel G. Taylor as chief incor

The Merrill-Stevens Manufacturing Co., of Niles Mich., has received orders for quite a number of cattle guards for roads in the South.

The Gould Coupler Co, has prepared plans for an office building to be erected adjoining its present factory buildings at its works at Depew, N. Y. The new building will be  $55 \times 65$  ft., two stories high, and will be built of pressed brick and brown stone of fire-proof construc The cost will be about \$15,000.

The Jackson & Woodin Manufacturing Co., is to build a new foundry at Berwick, Pa., which was designed by the Berlin Iron Bridge Co. The bridge company is now building an extension to a casting shop of the Waterbury Brass Co., at Waterbury, Conn.

A very large shop is being built by the S. Freeman & Sons Manufacturing Co., of Racine, Wis., makers of boilers and agricultural implements. The main shop is 250 ft. long and 105 ft. wide, of brick with an iron truss roof. This shop is completly fitted with electric and hydraulic cranes so arranged that a plate is taken at one end of the shop and goes through the different processes at each machine without being let down to the floor until it reaches the other end. In addition to this main shop there are an engine-room and a machine shop. capacity of the plant is about 2,000 average sized boilers a year.

# Iron and Steel.

The iron trade in Great Britain is still about the bottom point, and the best that is said is that when business is at the worst it is sure to mend. The export trade continues limited and still suffers from the severe competition of continental makers. Pig iron is increasing in output and is in excess of demand, and stocks are in-creasing. During the first quarter of the year they are estimated to have increased about 50,000 tons, and are probably now about 1,100,000 tons in all.

The New York Iron & Steel Construction Co., of New York City, has been organized to manufacture and deal in iron and steel products. J. J. Henry, W. Tofle and P. F. Hansen, of Brooklyn, and C. E. Spencer, of New York City, are the directors.

Last week the receivers of the Oliver Iron & Steel Co. which operates a great plant at Pittsburgh, Pa., were discharged. They have had control of the property for about a year and a half. The transfer of this property is an important event to the iron and steel trade, and an interesting indication of progress toward better conditions in the trade. The settlement of the debt which has been made, which enables the stockholders to resume control of the property, makes an important decrease in the lia bilities of the company. Two-thirds of the debt are to be converted into preferred stock of the company, and the remaining sum due is to be discharged by five annual payments.

# New Stations and Shops.

It is said that the Receivers of the Northern Pacific will spend 70,000 at Missoula, Mont., in erecting a new passenger station and rearranging the yards.

Work on the new station for the Pittsburgh, Wheeling & Kentucky railroad (the Pennsylvania) at Wheeling, W. Va., has been discontinued pending the final decision of the court on two temporary injunctions obtained by property owners who object to the obstructions proposed on streets abutting their properties. Trouble over the site of the station has already delayed its erection several years. When work was begun some months ago it was understood that this question had been settled finally.

The Ohio River Railroad is expected to soon build new shops and roundhouses at some points along its line, and it is understood that the officers have finally decided to station about two miles below Huntington, the headquarters of the company.

The Missouri, Kansas & Texas last week started work on its fine new passenger station at Sedalia, Mo. This station is to cost about \$45,000 and will contain the offices of the company, as already stated. The main building will be  $45\times212$  ft., two stories high. The work is in charge of Mr. A. B. Manning, Engineer of Bridges and Buildings of the railroad.

A Receiver for the Oxford Iron & Nail Co., of Oxford N. J., was appointed last week upon application of the Farmers' Loan & Trust Co., of New York, which holds a mortgage for \$400,000, on which interest has been defaulted. Edmund Lukens, Superintendent of the works was named as receiver.

#### The Brooklyn Dry Dock.

The timber dry dock at the New York Navy Yard, which was begun under contract by John Gillies over two years ago, is little nearer completion now then it was then. The contract with Gillies has been annulled, and the bids for completing the structure were opened at the Navy Department on April 29. The original contract was for \$462,619.18, and the dock was to have been finished in 32 months. About \$165,000 had been paid out on this tract when it was annulled, principally for excavation, which will not prove of great value to any other contractor. The bids for the completion of the work were as follows: Simpson Dry Dock Co., \$465,566; J. B. Westerbrook, \$499,988; Colin McLean, \$377,000; Thomas & Augustin Walsh, \$370,000. The contract has been awarded to Thomas & Augustin Walsh, at their bid, and they agree to complete the work in 19 months.

# Fast Run on the N. Y., N. H. & H. R. R.—Old Colony System.

On April 17 a special train conveyed the pupils of St. Paul's Episcopal School, Concord, N. H., to New York. It consisted of five vestibuled, Pullman-built cars, each weighing 66,000 lbs., and was taken by the Old Colony System at Concord Junction and drawn as follows, stops eing made at the stations named, the times given being from start to stop in each case:

Station.	Distance.	Time.	Av. Speed.
Concord Juntion. So. Framingham. Mansfield	14 miles	23 minutes	36.50 m. p. h.
Providence	1916 "	24 "	48.70 "
Providence New London	64 "	65 **	59.08 "

slow downs, and the approach to New London was necessarily slow over the Thames River bridge and the curved trestle. The total time was 46 minutes less than the schedule provided.

The locomotive was of the type designed by the late

J. N. Lauder, having cylinders 18 in. by 24 in., driving wheels 69 in. diameter, and boiler 52 in. diameter.

# Car Window Shade Patents.

Ver noted in our columns, on April 19, a controversy between the E. T. Burrowes Co., and the Davis Car Shade Co., regarding the right to use shades having pinch handles for actuating them. From a circular letter issued by the Davis company, it appears that the Commissioner of Patents, on January 11, 1895 decided the invention not patentable and that subsequently Mr. Burrowes' claim was allowed, and patent rights issued to him through an error made by subordinates in the patent office, who overlooked the fact that the Commissioner of Patents had already declared the invention un patentable. This fact the Davis company claims, will prevent the Burrowes company from bringing suit for infringment. It further appears that they are advised by leading patent attorneys that they cannot be held for infringement should such suit be brought, and that this opinion has been sustained by the Commissioner of Pat ents. The therefore claim and exercise the right to and put upon the market, car window shades of the kind mentioned.

The Accident at the Manchester Ship Canal Locks. We noted recently an accident which occurred on April 10 at Latchford lock, in the Manchester Canal. Later reports fail to give any reason for the accident. The steamship Harold, of 600 tons burden, entered the lock at a speed of 8 miles an hour. The upper gates, those nearest her, were open, while the intermediate gates, used to save water, were closed. The dock is 600 ft. long. The vessel went ahead without slowing up, and crashed through the intermediate gates, continuing on into the pond below the lock for several hundred yards before she was stopped. Her damage was slight, being confined to a few of her bow plates. The lock master, with great presence of mind, closed the upper gates after the Harold had passed through, but they were not latched, and the rush of water bent one of the gates considerably. Tackles were then made fast to the gates, and by this means they were held shut. Repairs occupied only a short time, the canal being open to passage of vessels on April 15.

# Opening of the Baltimore Belt Line Tunnel.

The Belt Line tunnel was formally opened for business on May 1, and an express train from Washington to New York went through it on that day. Coke-burn ing locomotives will be used at present, pending the completion of the electrical equipment. There will be no attempt made to reduce the time between Washington and New York, until the new schedule for the Royal have the buildings erected at Central City, which is a Blue line trains goes into effect on May 12.

#### THE SCRAP HEAP.

A freight train of the Pennsylvania Railroad was captured by a gang of 30 tramps near Huntingdon, Pa., on April 25. Five of the tramps were afterward arrested.

The Trilby craze has struck the railroads. The Rock Island & Peoria has put in service a passenger train between Peoria and Rock Island which will be called The Trilby.

The trial of E. V. Debs before a court and jury, at Chicago, which was appointed for May 6, has been continued to the July term, on account of the absence of Judge Grosscup.

The Board of Equalization for the State of Colorado is trying to assess for taxation all freight car lines whose cars enter the state. A list of the refrigerator car companies, and all special cars used by large manufacturers is being prepared for the use of the Board.

The Railroad Commissioners of Missouri have issued a notice "to whom it may concern" calling the attention of managing officers of railroads to the law requiring switches, frogs and guard rails to be blocked. They hear that the law is not complied with and that serious accidents frequently occur.

The employees of the general office of the Pennsylvania Railroad will have their Saturday half-holiday a month earlier this year than heretofore, beginning May 15 instead of June 15, and ending Sept. 15. The Board of Directors declined the request for a Saturday half-holi day throughout the year.

The authorities of Long Island City, N. Y., have begun civil suits against the Long Island Railroad for violating the city ordinance forbidding the use of soft soal in loco-motives. The enginemen who were arrested some time ago for making a smoke nuisance were let off, the grand jury finding no indictment against them.

A press dispatch from San Antonio, Tex., April 25, ells of a terrific hail-storm which swept over three counties and damaged buildings many thousand dollars in several towns. Cattle were killed and crops were destroved, all of which we can believe; but we are also asked to accept the statement that trains of the Inter-national & Great Northern were blocked by the hail stones on the track!

Gov. Morton of New York has approved the bill providing that the Mayor of each city of the State may issue certificates to policemen and firemen for free transportation by transportation companies, and that other certifi-cates may be issued allowing policemen and firemen the free use of telegraph and telephone lines when in the performance of official duty. This is the second successful attack on the anti-pass provision of the new constitution of the State.

The conductors and motormen of the street railroads in Brooklyn are now complaining because the schedules require them to run so slowly that they cannot earn fair wages. The demand upon the city government to make the movement of street cars safer was so importunate that the rate of speed in the busiest part of the city was ordered reduced to 6 miles an hour, and this makes the through time slower than is customary where horses are

R. P. I. Non-Resident Lectures.
W. H. Jaques, Mem. Am. Soc. C. E., of New York, delivered a lecture on guns and explosives before the students of the Rensselaer Polytechnic Institute at Troy, N. Y., Friday, April 29.

N. Y., Friday, April 29.

Bussing of a Reservoir in France.

The reservoir at Bouzzy, near Epinal, France, burst on April 27, causing much damage and terrible loss of life. The dam was 1,650 ft. long, 66 ft. high and 66 ft. thick at the base. It was built on a sandstone bottom and against vertical rock side walls. The capacity of the reservoir was about 2,471,000,000 cu. ft., and this volume of water, sweeping down the valley, carried away everything in its path. Over 130 lives are known to have been lost, and the number will probably be much larger when full returns are obtained. So great was the rush of water that a building at Bouzzy was carried a distance of 11 miles to the banks of the Moselle. The dam had been considered defective for some time, and in 1889 it was repaired and strengthened. The water had been above its usual level for some days owing to the spring floods.

Lake Freight Movement.

# Lake Freight Movement.

Nearly 500,000 bushels of wheat have been sold at Duluth, to be carried to Milwaukee in May for milling purposes. In view of the fact that Milwaukee was at one time one of the chief wheat shipping centers of the Union, this is a surprising movement.

a surprising movement.

The Chicago grain fleet, which is on its way from that city to Buffalo, this season numbers 104 vessels, carrying about 8,000,000 bushels of grain, of which wheat was 3, 425,000 bushels, and corn nearly all the rest. The fleet was destined chiefly for Buffalo, though 14 vessels went to Ogdensburg, 7 to Kingston and 5 to Port Huron. The Chicago grain fleet, as it is called, includes the vessels that lie in Chicago Harbor the winter through and start out for the lower lakes in the beginning of spring. Most of the vessels go at once after unloading their first cargo direct to Lake Superior for grain or ore.

The Massachusetts Institute of Technology.

Entrance examinations for the Massachusatts Institute

The Massachusetts Institute of Fechnology.

Entrance examinations for the Massachusetts Institute of Technology will be held at the Rogers Building, Boston, on June 27 and 28. A second series will be held on Sept. 24 and 25. The June examinations will also be held upon the 27th and 28th at most of the large cities throughout the country. Further particulars may be obtained by writing to H. W. Tyler, Ph. D., Secretary. During June and July summer courses will be held in mathematics, mechanical drawing and descriptive geometry, architecture, chemistry, biology, physics and modern languages. These summer courses are open to persons not students of the Institute, provided they possess the necessary qualifications. The fee is \$25 for each course, additional expense being necessary for the chemical course.



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#### EDITORIAL ANNOUNCEMENTS.

ontributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting, and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

The Colorado Midland, which has been operated as one of the Atchison lines for nearly five years, again resumes an independent existence under the frecent order of dge Caldwell. He has accepted the resigna-tions of the Atchison Receivers, Messrs. Walker, Mc-Cook and Wilson, who have included the Colorado Midland in their jurisdiction, and has appointed Mr. G. W. Ristine, a well-known western railroad man, formerly with the Denver & Rio Grande, separate Receiver of the Colorado Midland. Judge Caldwell's order was made on the application of the Colorado Midland bondholders, who have become convinced that their property would have a better chance to develop its earning capacity as a separate line than under the close connection with the Atchison road. They have finally succeeded in this object, and the result of the independent operation of the road will be an interesting and important contribution to some vexed questions of railroad policy. As was noted at the time (March 7) when the former application was made and was opposed by the re-organization committee of the Atchison, the judge held that he would make no change in receivers pending the publication of the forthcoming plan of re organization, but would consider the matter further if it was desired after the plan was announced. No opposition was made to the renewed request, the Union Trust Company of New York, trustee under the Atchison general mortgage, with the concurrence of the joint executive re-organization committee and of the Receivers, having previously notified the court that they would make no objection to the appointment of a separate receiver or receivers, if the court decided to grant the application of the Colorado Midland bond-It is possible that the recent inspection trip made by the representatives of the Union Trust Company, at which time they went over the Midland property, may have had something to do with their change The Midland bondholders seem to think that they can make better traffic arrangements independent of the Atchison and thus largely increase the earnings of their property, and tele-graphic advices from Denver speak of a traffic arrangement with the Rock Island and Rio Grande Western, and a possible arrangement with the Oregon Short Line. If the Midland people decide to sever all contract relations with the Atchison and form new ones, it is questionable whether they will be able to get sufficient business to offset that which they will undoubtedly lose from the Atchison. Add to this the necessarily increased expense of operating the road as an independent organization, and it would seem that they will have difficulty in showing net earnings greater than have been possible under the Atchison management. However, the experiment may be justified as a means of satisfying the Midland bondholders as to the possible earning capacity of their road, and evidently the re-organization committee is quite willing to let them try the experiment.

### The Fast Run to Atlantic City.

In another column of this issue we give the record of a recent fast run on the Camden & Atlantic, which is the best for a distance of 58 miles that we have ever seen.\* The Camden & Atlantic is well equipped for fast running. The summer traffic from Philadelphia to the seashore is very heavy and competition is sharp, the Philadelphia & Reading having a line to the same seashore resorts. The track is laid with heavy rails and the ballast is nearly all stone. The line is through a level country not very thickly settled, and trains are run by the block system.

The run of April 21 is more particularly noticeable as an instance of what may be done with a very light Fast runs have been very common during the past five years, for the four chief essentials for making high speed are now common. These are: First, good second, a powerful locomotive with large driving wheels; third, adequate signals, and fourth, freedom from interference by other trains. No railroad runs trains at high speeds regularly and successfully without these. A fifth condition, generally present, is freedom from sharp curves and heavy grades. railroad can maintain a position at the head of the list unless its line is reasonably straight and level. But in the Atlantic City run there was a sixth advantage, the lightness of the train. Up to this time all of the best records, both in this country and in England, have been made by engines hauling three or four cars, or more, the loads being rarely less than 225 tons (though the great runs between London and Edinburgh, in 1888, were made with trains weighing less than 175 tons). The advantage of cutting off three cars from a four-car train may be roughly estimated by comparing the present record with the best recorded run of the Empire State Express (a four-car train) for 52 miles (Syracuse to Utica), which was made on Nov. 8, 1892, in 46 minutes, or at the rate of 67.38 miles an hour. The Atlantic City train ran 49.8 miles in 374 minutes, or at the rate of 79.7 miles an hour, which is about 18 per cent. better than the New York Central

This Pennsylvania class P engine ought to be able to take a single car from Philadelphia to Jersey City in an hour and a quarter, which is 10 minutes quicker, we believe, than the best time that has ever been made between those cities, and 35 minutes quicker than the schedule of any regular train at present. In saying 11 hours we estimate that 75 miles ought to be made at 75 miles an hour, and the remaining 15 miles at an average of 60 miles an hour. But, as we have intimated, the freedom of the line from other trains is a condition which might be very costly on a line like the New York Division of the Pennsylvania. Even on the Camden & Atlantic, or in fact on any road which is rich enough to have a perfect track, this obstacle is pretty sure to be met with. Passengers who hanker after fast rides with sufficient enthusiasm to be willing to get up at five o'clock Sunday morning in order to enjoy them, and who are willing to pay for them, are not very numerous

The Camden & Atlantic not only has suitable facilities for fast running, but it employs them in regular business. For four months last summer one of the regular trains was scheduled to run through (58.3 miles) in 63 minutes, or at the rate of 55.5 miles an hour. This train arrived at destination behind time but three times. On two days it was two minutes late, and on the other one of the three days it had to be run over the West Jersey (the parallel railroad controlled by the Pennsylvania), on account of the derailment of a freight car, and it reached Atlantic City nine minutes late. During July and August this train averaged 7½ cars to the trip. The cars weigh 65,000 lbs. each.

# Freight Rates from Denver to San Francisco.

Denver is one of the few large cities of the country that has no water communication, and which therefore does not enjoy the advantage of this element of competition in its dealings with the railroads. And like all the rest of the country it is shut up to the use of only one railroad, the Southern Pacific, by which to reach San Francisco. At the same time, being nearer California than the rest of us, it is correspondingly more anxious to do a large trade with that state. This condition of affairs has long exercised the minds of some of the business men of Denver, and the visit of the Interstate Commerce Commission to that city last week was naturally made the occasion of much warm discussion. The merchants interested in California trade were on hand with a large volume of testimony, and the traffic men of the railroads interested also gave their views at length.

\* The special train over the Atchison, Topeka & Santa Fe, in January, 1890, carrying a reporter of the New York World, was said to have run a long distance, somewhere between La Junta and Chicago, at 78.1 miles an hour, but we have never seen an official record or learned for what distance this rate was maintained, The reports state that the evidence, almost without exception, showed that the tariff rates on manufactured goods from Denver to Pacific Coast terminals were higher than the rates on the same goods from the Missouri River, from Chicago and even from Atlantic seaboard cities. It was further shown that in some cases Chicago merchants enjoyed an advantage over Denver in shipping to Utah. Numerous instances were cited where this discrimination occurred through differences in classification. The main grievance, however, concerns the rates from Denver to the Pacific Coast.

The defense of the railroads was based on the existence of water competition, market competition and carriers' competition. To make the rates from Den ver to Pacific Coast terminals the same as those from Chicago would justify all intermediate points in demanding a similar reduction, under the fourth section of the Interstate Commerce Act, and this would destroy all the profit on all the freight. Unless it could be shown that Denver ought to enjoy an exception based upon circumstances similar to those which warranted exceptions at Missouri River points there appeared to be no way of meeting the complaint.

Mr. C. F. Smurr, of the Southern Pacific, occupied the witness stand for several hours explaining the extent and effect of water competition and how it was met. He explained the principles upon which the Southern Pacific made its rates for both transcontinental and intermediate business. It was his duty to get the business at the best rates obtainable. If a commodity proved desirable to vessels, that commodity would secure from the railroad a lower rate than one not so easily transported by water. At one time when the transcontinental business westbound was greatly in excess of the volume of eastbound business, a very low rate on sash, doors and blinds was mad: for California lumber dealers that they might ship go. d: far to the East, though at the same time lumber deal rs of New Mexico and Colorado could not get the same briff rates for westbound business. He justified this solely by the condition that the company had empty cars to move East. While admitting that transconti nental freight rates are abnormally low, he saw no way to raise them because of the activity of the sea routes. It was therefore not a question of justice or fair dealing, but a question of necessity. On transcontinental business ... ater competition extended as far west from the Atlantic ports as Pittsburgh, the lake ports, and, in some instances, into the interior west of Chicago.

In response to a direct question, Mr. Smurr stated that if the transcontinental rates should be declared the maximum rates for all intermediate points, then all rates would be ruinous to the railroads. If a way could be devised to give Denver rates in proportion to its geographical and natural advantages without disturbing rates at all intermediate points, not so favorably situated, the Southern Pacific would quickly join hands with its connections in making such rates.

Thus we have the old question of the rightfulness or expediency of charging more for a long haul than for a short one over practically the same road. The Interstate Commerce Commission has just let down the bars, at the demand of the Southern Railway Company, on the plea of sharp competition, and now it will have a chance to let them down again. If questions of this kind are to be settled on grounds of political expediency, or in proportion to the impor-tunity of the complainants, the Denver merchants will have to be granted a concession. The fact that they live at the center of a great empire of their own so dominates their minds that they will not be put off with any economic theories of business, any more than Denver Congressmen, working in the interest of silver, will submit to the reasoning of eastern gold bugs. They have the coal and the iron to manufacture goods cheaply, and, with the broad vision natural to the Westerner, they look upon California as one of their natural markets—as a near neighbor—although it is 1,500 miles away. Moreover, the feeling that the long and short haul section of the law is based on sound principles of perfect justice is so strong, not only among those Denver manufacturers, but in the minds of citizens generally, that the most convincing argument to the contrary makes but a faint impression upon them.

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But still the facts are before us, as immovable as the Rocky Mountains. The shipper in New York who cannot send his goods to California by railroad will send them around by water. The railroads can get these goods only at low rates and they will give up this traffic before they will reduce the rates to and from Denver. This would produce the desired equality, but giving up the traffic simply causes a loss to the railroads and a benefit to the vessels, but does neither harm nor good to the Denver manufacturer: for the California buyer will continue to go, as now, to the market where he can buy his goods the cheap.

est. The rates charged on freight to and from Denver Whatever they can make by carrying railroads. goods to California at a small profit is so much clear gain to them.

A Denver railroad which is honestly managed, with a view to serving the public and using its profits equitably for the two purposes of improving its facilities and paying its owners a reasonable income, should be able to serve Colorado better when it can earn a few thousand dollars on California traffic at low rates, than if it were deprived of the privilege of carrying that traffic. If the railroads of Colorado do not use their profits, or a proper share of them, for improving their facilities for serving the people of that state, the people ought to be able to show evidence to that effect. If the evidence is forthcoming the remedy ought not to be hard to find.

We have set forth this outline of the argument in favor of the railroads because we know that it must apply in a great majority of the Denver grievances. If there are exceptions, let those exceptions be brought out and emphasized. The great underlying fact is that freight can be carried more cheaply by water than it can by railroad, and that there is no justice in compelling a railroad to carry large quantities of freight as cheaply as vessels do, just because a railroad, when it has cars and other facilities idle, sees fit to voluntarily compete with water carriers. If a railroad can by better speed, or by making use of cars which otherwise would necessarily be hauled empty, take some freight away from the vessels by doing the business at a small advance over water rate and at a very small profit, no injustice is done to any one except the vessel owner; and the vessel owner has not yet complained.

# Rates for American Produce Between Southampton and London.

One of the most important railroad cases that has ever been heard in England was decided on April 10 by the Railway Commission. In form it was a complaint made on behalf of the farmers in the counties of Hampshire and Surrey that the London & South Western was unduly preferring to them their competitors who sent produce to London from the Port of Southampton. Eight articles were specified as to which this alleged undue preference existed. One of them-wool-comes to Southampton only from the Cape of Good Hope. The other seven, however, arrive mainly by the steamers of the American Line. They were bacon and hams, butter, cheese, lard, hops, hay and fresh meat.

The application professed to be on behalf of the farmers in the district lying between Southampton and London. The actual applicants were a body called the Mansion House Association on Railway and Canal Traffic for the United Kingdom,—a body recently formed for the express purpose of raising cases of this nature before the Railway Commission. But, though they professed to appear on behalf of the distressed agriculturist, at the very opening of the case their counsel was forced to acknowledge that the costs of the application were being defrayed, and in fact that the case was in the hands, not of the local farmers, but of the London Docks Company. As the case went on it appeared further that the Hampshire farmers have no trade whatever to be damaged, and apparently never had had, in most of the articles mentioned. though no one was concerned to deny that to the London Docks Company, which has a large trade in imported lard, butter, bacon, etc., the increasing competition of Southampton is a serious matter.

The application alleged that whereas the rates from. Southampton Docks to London were roughly \$1.25 or \$1.50 per ton for articles coming in by sea, from Southampton town and the local stations in the neighborhood they were about \$4.50 for the same articles. The difference was startling to Englishmen, who are not accustomed to anything like such differences as exist in America between C. L. and L. C. L. qualities. It soon, however, came out that the Southampton Docks rate did not include important and expensive terminal services and accommodation, and that if the cost of these were added on-as in order to make a fair comparison they ought to be—the shipping rate was something like \$2.25. In other words, the ratio of the c. L. to the L. c. L. rates was not as 1 to 3 but more like 1 to 2. One main point of the case turned on the justification for this difference, and evidence was given on behalf of the railroad company which appears to have produced a considerable impression on the public mind.

It was shown that the English farmers send their produce to London in such small quantities, so badly packed, and altogether in so inconvenient a manner, that the railroad company made on the same goods a very much larger profit out of the traffic at the low

rates than it did out of the traffic at the high rates. are not too high for the reasonable support of the Figures which were not disputed were put in showing that the average earnings per train mile of the special trains conveying dock traffic were \$3, whereas the average earnings on the local traffic were not above \$1.25. It is interesting to know that in the closing years of the nineteenth century the English farmer still sends his bacon to London in loose sides merely covered with a sheet of canvas; that his meat lacks even this protection; that the cheeses go entirely unpacked and loose in a truck in a condition so soft that the weight of a second layer placed on the top would burst open the sides of the cheeses placed below; that American hydraulic pressed hay will go 4 tons in a small English truck, whereas of English hay  $2\frac{1}{2}$  tons is the utmost that can be got in, and so on.

Another interesting point came out; namely, that of articles such as bacon and butter, the English agricultural districts do not appear to produce enough even for the needs of their own population. One of the most remarkable papers put in in this case was a table showing that whereas the fourteen stations mentioned in the application had only sent to London in course of nineteen months 20.8 tons weight of butter, the same stations had received from London during the same period no less than 946.8 tons. Similarly in bacon and hams, to London, 13.8 tons; from London, 1,955 tons. The railroad rates then, which are the same in both directions, had evidently not crushed the import trade into the district. It was rather more than the Court could stand to be asked to believe that these same rates were responsible for the absence of trade in the same articles out of the dis trict. On the whole, on this part of the case the railroad company gained a distinct victory. of the articles, the Court held that the difference between the wholesale and the retail rate respectively was fully justified by the circumstances of the case As to a sixth article-meat-they held that some trifling readjustment would meet the case. As to the remaining two articles alone they found for the applicants, and one of these two was hav-an article which is only imported into England to a trifling extent in ordinary years.

But behind the question of fact lay a further ques tion of legal interpretation, which to lawyers gave to this case its peculiar interest. In the year 1888, as the result of long wrangles and discussions among politicians, whose studies had not been chiefly in the direction of railroad economics, there was inserted into a section of the Railway and Canal Traffic Act a proviso in the following terms: "Provided that no railway company shall make, nor shall the court or the commissioners sanction, any difference in the tolls, rates or charges made for, or any difference in the treatment of, home and foreign merchandise in respect of the same or similar services."

The Southampton case raised for the first time the question what interpretation was to be placed upon this proviso. The counsel for the Mansion House Association opened the case by acknowledging that the service of conveying 100 tons in one consignment was neither the same as, or similar to, the service of conveying the same weight in a thousand separate consignments. As the case proceeded, it became evident that, if this were the law, the company would be able to justify the difference of rates. Accordingly, in reply, the applicants' counsel found himself constrained to contend that services meant, in plain English, simply carrying and loading and unloading; that these services were to be regarded from the point of view of the trader and not from the point of view of the railroad company; that to the trader who sent 200 lbs, the railroad company rendered the same service of carrying and unloading that it rendered to the trader sending 100 tons; that, consequently, where it came to a comparison between home merchandise and foreign merchandise, the company was shut up to charging for wholesale traffic no less than it charged for retail quantities.

To this doctrine, which undoubtedly represented the view which has been popularly current since the act of 1888 was passed, the Court unanimously refused to accede. Such an interpretation, it was pointed out, would compel the railroad company to c'arge 100 tons of foreign produce lying on the quay at Southampton a retail rate, whereas for 100 tons of home produce in the same position it would naturally charge a wholesale rate; that this would be to give home produce a very distinct preference over foreign produce, and that, as the proviso specially laid down that there should be no difference in the treatment of home and foreign merchandise, this interpretation of its meaning was obviously excluded.

In an exceedingly lucid judgment Mr. Justice Collins, the legal member of the Commissioners' Court. explained what the proviso must really be

cost of handling, mode of packing, quantities, regularity of consignment, liability to damage, etc., in the cost of foreign just as much as in the case of domes tic merchandise. But the proviso still had a real meaning. For instance, supposing that there was bacon to be carried from Cork to London, Irish traffic being by the act defined as home traffic, the railroad company getting hold of it at Liverpool or Holyhead for conveyance to London would naturally charge a rate based on the fact that if the rate were not low the bacon would go to London all the way by sea. This consideration the proviso forbids the railroad companies to regard where the bacon is foreign. In that case they are required to consider the bacon as having come into existence on the quay at Southampton, to neglect the fact that it has already had to bear the rate all the way from Chicago, and to pay no attention to the circumstance, interesting as it may be to them, that unless they keep their rate low the ship will make for the port not Southampton, but of London. Such is the interpretation which the Court has placed upon this interesting essay in protective policy. It remains to be whether the Mansion House Association will appeal and endeavor to put upon this legislation a yet more protective color.

ere is a little hope in England, but not much, that the judgment may have some effect on the farmers and the farmers' societies and lead to improvement in their fossilized system of packing and marketing.

# The Stresses in Car Axles.

(Continued from page 270.)

Tests.—The experiments of Whöler show that if an axle is frequently strained nearly up to or above the elastic limit, it will sooner or later break at or near the point where the maximum stress occurs. As good axles never break in service from a single blow or a single stress, except in case of wrecks, it is pretty certain that all break ages that are not caused by initial cracks arise from repeated stresses above a safe limit. As we have seen, a single heavy stress r ay produce an initial crack which will eventually lead to breakage of a steel axle, owing to the homogeneous nature of the material, which favors the spreading of cracks. A valuable fact from experience is that, while axles broken in service bend but little, if at all, yet, when broken under the drop or broken 'n wrecks, the bending corresponds with what would be expected from the nature of the material when broken with a single stress or with a few heavy stress s. The conclusion from this is that most broken axles, as taken from under cars in service, do not break from one heavy stres blow, but, as might be expected, from repeated stre An axle broken in this way will frequently stand, after being taken out, a good many llows and bend a much as would be expected of good material. So it is not generally the brittleness of steel, or its weakness that is indicated by the character of the breakage of the axles What is indicated is that the metal has been in service. subjected to repeated strains at a point above a safe limit.

It might be reasoned from this that a proper test for a steel axle would be repeated bending at some point about at the elastic limit, but such a test would be difficult to make and would not be more practical than the present drop test, which shows that the material is of a good quality, and this, coupled with the tensile test, gives a good practical idea of the elastic limit and ultimate strength, which is all that an engineer needs to know to design a safe axle when a reasonable factor of safety, "or factor of danger," as some people prefer to call it, is used. If there must be a low limit of as in the case of the flying machine, bicycle and other light structures, no calculation or approximate test can equal the practical examination of a full-sized specimen under as nearly as possible the exact conditions to which the material is to be subjected. But in the case of car axles there is no reason why the factor of safety should not be adequate to cover all the discrepancies between the knowledge derived from the drop and tensile tests,

and the actual strength of the axle in service. It is known to those who have compared the results of the tests of metals, made by supporting them at two or more points and loading one or more other points, that the results show the breaking strength to be much greater than the common calculation gives. The difference amounts in some cases to as much as 40 per cent., and is due entirely to the fundamental errors in the formulas for the transverse strength of solid sections, which take no account of the fact that the stress of the material after the elastic limit is passed, bears a ratio, to the stretch, entirely different from that existing before the elastic limit is reached. This is shown by the diagram Fig. 4. The stretch for one pound pull per square inch before the elastic limit is reached is about 3500000 of its length for both is reached is about 35000000 of its length for both iron and steel, and after the elastic limit it averages not far from 15 doctors for steel and 35 doctors for iron. The common calculations assume the actual curve of fiber stress ABC, to be a straight line like AC, and this gives less ultimate strength than solid sections actually have.

The stress at the time of breakage is shown by the ine A B C, on the theory that the extension of Court. explained what the proviso must really be taken to mean. The railroad companies remained, he said, at liberty to take into account all differences in

to its extension is that determined by the United States Government tests of axle steel at the Watertown Arsenal. The lines  $A\ C$  show the stress that is taken for the calculations by the common formulas. correct strength of the axle determined by the curved line A B C is 48.3 per cent. larger for wrought iron and 35.5 per cent. larger for steel. A calculation of this sort for a toughened steel axle gives an increase of

Likewise the strength of bars of solid sections at the elastic limit, is considerably greater than is given by the formulas, for the reason that the formulas assume that the particles, fibres or layers are detached from each other just as they would be if the bar was made up of a large number of small wires which were detached from each other and had no friction between them. The fric-tion of one layer on the other increases the strength at the elastic limit in some cases as much as 40 per and conservative engineers, in estimating the strength

of solid sections, make allowance for this.

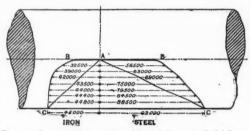
In the paper on the "Strength of Railway Car Axles," by Mr. L. S. Randolph, before the American

mine the proper size of axles for common use, in view of the fact that we do not know what are the strains to which axles are subjected in service? Mr. Randolph admits this when he says what he does about the load on the axles when the springs are closed up solid. What he says is, "What the load would become when the oscillations were more than enough to force the springs solid, it would be impossible to say.' If we knew to-day the maximum stress to which an axle is subjected in service, it would be a simple matter to make the axle safe, if of good material, by using a large enough factor of safety.

The most important experiments so far made to deter mine the durability of iron and steel under repeated bending loads, are those of Whöler, but his tests were made on small specimens of excellent quality, and ex-perienced engineers, who have examined his results, Weyrauch for example, recommend a factor of safety of at least three for bridgework and similar constructions. But axles have more severe treatment than parts of bridges, and it is reasonable to suppose that the factor of safety should be higher for them. Whöler's results show that for iron the stress on the outer fibre can vary

unreliable and uncertain. Whöler says: "We must unreliable and uncertain. Whôler says: "We must guard against any danger of putting on the piece a load greater than it is calculated to resist by assuming as its greatest stress the actually greatest load that can ever be put upon the piece." It is important to know that our M. C. B. standard axles are not designed on any such conservative basis as Whöler advises. Whöler adds that, thing to be provided for is the lack of homogeneity in the

Having shown that experiment is a safer guide than formulas for the breaking strength of pieces subjected to vibrating strain, and having seen that the most careful experiments made indicate that axles should not be subjected to more than 5,300 lbs. maximum fiber stress when of iron, and not more than 9,300 lbs. when of steel, on the judgment of a number of eminent engineers accustomed to the use of iron and steel in service, we are in position to go forward and see what the stresses in an axle may be under the



Curves of Assumed and Actual Stress in Solid Sec tions Broken Transversely.

different conditions, so far as we can determine them, remembering that it is not the stress from the normal quiet membering that it is not the stress from the normal quiet load that breaks axles, or starts the initial cracks, but the oscillating and accidental stresses, or what Whöler calls the "actually greatest load that can ever come upon the piece." An infinite mind could divide these stresses into elements and show how each is produced by a specific condition, and could determine how many of them might, by coincidence, occur at the same time and thus give a stress equal to the sum, but finite minds can thus give a stress equal to the sum, but finite minds can only grasp the main points, hence the use of the "factor of safety." This is the reason why "accurate engineering analysis" cannot be applied to axles any more than to many other engineering structures where the stress are indeterminate. Engineering is not an accurate science, and it is quite within the limits of honest practice to confess the impossibility of making accurate calculations of stresses in structures, and to recommend a large factor of strength so as to give safety. This is what must be done in the case of car axles.

In making an approximate calculation the maximum normal load should be taken as not less than the weight of a car loaded 20 per cent. above its capacity. The reason for this excess is that cars are frequently overloaded. This load must be taken as applied, not at the centre of the journal, as there is no certainty that the provision for a central bearing of the box on the wedge or brass will always be maintained in service, owing to the small clearance that is allowed between the unfinished castings

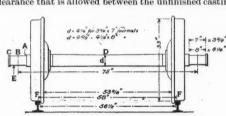
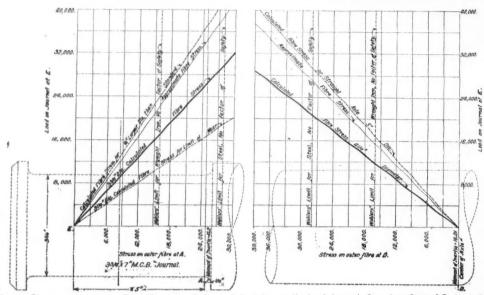


Fig. 5. -Wheel and Axle Diagram

for the rocking of the wedge or brass, to make the proper adjustment. Uneven wear and defects add to this unadjustment. certainty and the bearing may be taken at one-half way between the center and the outer end of the journal, as at E, Fig. 5, without exceeding the reasonable limits of probability.

The oscillations vertically are commonly sufficient with freight cars to close the springs, and this increases the load on the journal. Sometimes there is a distinct thump or pound on the journal, due to the closing of the springs. When this is very severe it may start an initial crack. The most severe cases need not be considered in a calculation of the effect of repeated reversals of stress, for the reason that the violent thumps are not frequent. The violent thumps need only be considered in searching for the causes of the small cracks which eventually grow until the axle breaks with the fracture, now so well known as resulting from some initial defect. Probably it is not too high to take as the result of the vertical oscillations a repeating load equal to double the maximum normal load. This appears reasonable, for cars are often seen loaded until the springs are closed up. The "marking up" of light cars to give a false capacity is a factor in this matter. It has been done by one road on a considerable number of cars within a month. In such cases the oscillations would certainly produce more than double the normal load. The load on each axle of a 40,000-lb. freight car with 20 per cent. overload, would be 9,500 lbs., and for a 60,000-lb. freight car 13,000 lbs. These are to be doubled to allow for oscillation. The load to be taken at a point one-half way between



-Diagram of Maximum Fiber Stress by Ordinary Calculation at Neck of Journal C and at Center, D, 34 × 7 in. M. C. B. Axle.

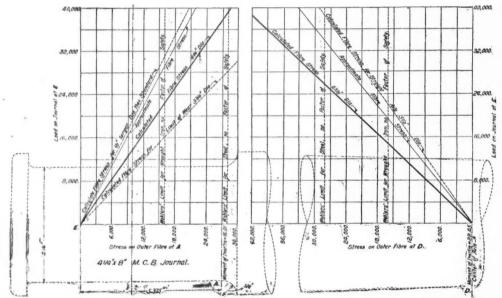


Fig. 7.—Diagram of Maximum Fiber Stress by Ordinary Calculation at Center of Axle C and at Center D, 41 × 8 in M. C. B. Axle.

Society of Mechanical Engineers, at the December meeting last year (see Railroad Gazette Dec. 21, 1894, page 867), it is shown that the stress in car axles is liable to equal the resistance of the axle. Also, attention is called to the important fact that by vertical oscillations the springs are frequently closed solid, and thereby the load on the journals is much increased. Mr. Randolph's conclusion, after looking up the data that are available for a close calculation of the strength of car axles, is as

"The most important deduction which the writer had been able to draw from this examination of the strength of axles, is the need of a series of experiments in this country, on the effect of repeated loading on iron and steel, especially with respect to the durability under the different loads. Such experiments, carefully and accurately made, would give us data upon which to base calculations of sizes of parts of machinery, which are now

ittle more than guessed at."

Mr. Randolph is quite right in saying that we need more information about the durability of axles under different conditions; but suppose we had the results of a series of tests running from the lowest to the highest

from 16,000 lbs. per square inch in tension, to 16,000 lbs per square inch in compression, without passing the point where there may be an unlimited number of revers als of the load. The same figure for steel is 28,000 lbs The character of the iron was the best forged material, and the steel was from Krupp's factory. A factor of safety of three, to include uncertainties in manufacture, as recommended by Weyrauch, would reduce these fig-ures to 5,333 for iron and 9,333 for axle steel. Although these experiments were made upon small specimens of good material, yet the factor of safety of three, coupled with the knowledge that can be obtained about axles, from the examination under the drop and in the tensile test, would be enough to enable one to select a perfectly safe and proper axle, provided the real strains of service were known. It is our ignorance of this last point which fixes the limit of our ability to select the proper size of axle, rather than a lack of knowledge of the nature of the material itself.

Determination of Actual Repeated Loads.—No better expression has been made of the importance of understanding the real conditions of service than that made by Whöler after his studies of the causes of break-ages of materials under conditions that have led others limits of load that the axle could stand, would we be then in a much better position than we are now to deterthe center and the outer end of the journal, for an approximate analysis, is not less than 19,000 and 26,000 lbs for 40,000 and 60,000-lb. cars respectively.

The journal loads to be allowed for in making this ap proximate calculation about repeating stresses are 19,000 lbs. for 3% × 7 in. axle. and 26,000 lbs. for 41/2 × 8-in. axle.

10s. for  $3\% \times 7$  in. axie, and 26,000 lbs. for  $4\% \times 8$ -in. axie. Fig. 5 shows the points A, B, C, and D, which are referred to in the table. The point E is the point midway between the center of the journal and the end. The point of bearing of the wheel on the rail has been taken at three-quarters of an inch from the inner edge of the rail. Figs. 6 and 7 are diagrams showing the maximum fiber stress at the inner neck of the journal at A and at the center of the axle at D, for different journal loads at E. From these diagrams the bending moments and maximum fiber stresses in full sized journals, due to the loads that have just been selected, can be found. They are as given in the table. The stress in worn journals at the interchange limit and the stress for journals me-half inch larger in diameter are given by the dia-

APPROXIMATE REPEATING MAXIMUM FIBER STRESSES IN AXLES.

Load at E. Lbs.	Bending Mo- ment. Pound- incher.	Maximum fiber stress, common formulas. Lbs. per sq. in.	Maximum fiber stress. Actual approximate. lbs. per sq. in	Axle.	Remarks.
19,000 19,000 26,000 26,000	95,000 at A 196,000 at D 159,000 at A 277,000 at D	M. 17,500 26,000 18,500 28,500	N. 13,500 22,500 14,000 24,000	M.C.B. 3% × 7	Whöler's limit for many repeti- tions of reversing loads without any factor for safety is 28,000 lbs. maxi- mum fiber stress for good root of the cooling

Now, if Whöler's limit had been based on actual es instead of on those calculated by the comm formula, column N would give the actual condition of axle stress, but Whöler's limit is based on the comm calculation for fibre stress, so that column M must be taken as the one to compare with the limits set by engineers for steel having a reversing load and based on Whöler's results. These limits are given in column O. From this it appears that a logical calculation of the limit of stress to which an axle may be subjected for a considerable period gives results that show the M. C. B. sizes of axles to be too small at the neck of the journal and at the center for long service. Taking the normal rated load on the journal for a loaded car as 11,500 lbs. for a 60,000 lb. car, and 8,800 lbs. for a 40,000-lb. car, and allowing this load to be applied at E, the maximum fiber stress at the neck of the journal at A, by calculation is 8,300 lbs. per square inch for the  $4\frac{1}{4} \times 8$  in. M. C. B. axle, and about the same for the 3% ×7 in. axle. At the center at D the stress is 12,500 for the  $4\frac{1}{4} \times 8$  in. axle, and 11,800 for the 3% × 7 inch axle. It must be remembered that these stresses are not for the maximum load but for the smaller rated load. These stresses are not such as are liable to cause the rupture of the axle as soon as the load is applied, but are of an amount that will sooner or later, if the axles be not of a perfectly uniform matercause the fatigue of the metal and thus bring about ial, cause the fatigue of the metal and thus bring about sudden breakages after some considerable service. The greater the fiber stress the smaller the number of vibra-tions that are required to break an axle. With a 33-in. wheel there are 610 revolutions per mile, or 1,220 reversals of stress. With a mileage of 10,000 per year the reversals of stress per year are 12,200,000. The rest between long periods of running reduces the chances of breakage, as overstrained mattle recovery lost three this. overstrained metals recover lost strength to an apparent extent after a rest from working. As Whöler has shown, good uniform steel and good uniform iron may be made to stand 28,000 and 16,000 lbs. per square inch fiber stress with an unlimited number of reversals of stress, but the uncertainties of the uniformity of the material and the lack of knowledge of the actual strains requires a factor of safety of 3, and this reduces the limits for conservative design, where there are many reversals of stress, to 9.300 and 5.300 lbs. for steel and iron

[TO BE CONCLUDED.]

# Annual Reports.

Mexican Central.—This company reports for the year ending Dec. 31, 1894: The miles operated were 1,860, an apparent increase of 13 miles. The increase was, however, only apparent, and due to an adjustment of mileage. The results of operation were, in Mexican cur-

Earnings, 1894. 1893. Inc. or D. St., 576,801 \$1,443,794 I. Freight 6,440,713 6,130,347 I.	Dec. p. c . 9.2 . 5.1
Freight 6,440 713 6,130,347 L	9.2
Freight 6,440 713 6,130,347 L	5.1
	· · ·
Baggage 35,859 35,713	
Express 214,208 181,253 1.	. 18.2
(Follower b) 25 107 25 216	
	. 20,4
Total\$8.426.025 \$7,981.768 I.	5.6
Expenses 5,459,675 5,136,181 I	5.6
Net\$2,966,350 \$2,845,588 I.	42

These figures are all affected by the depreciation in the value of the Mexican silver dollar. For instance, had the rate of exchange been the same in 1894 that it was in 1893 the operating expenses would have been less rather than, as appears above, greater. On the other hand, the net earnings, if reduced to American money, were \$1,538,693 in 1894. \$1,764,823 in 1893 and \$2,021,515 in 1892. The earning power of the property expressed in the currency of the country increases steadily. Since 1885 the earnings per mile have risen 58.49 per cent.; but, as we see, from the depreciation of the currency, the value of the net earnings in the countries where the fixed charges must be paid has fallen. Thus, in 1894, the net earnings were, in United States currency, \$1,538,693; the fixed charges were \$2,297,514, and the deficit \$758,821. But if the average price of silver had been the same as in 1892 there would have been a surplus of \$49,667 after paying fixed charges. All of which illustrates the consequences to a "debtor nation" of a depreciation of its currency

There has been a considerable stimulation of manuacturing and industrial enterprises in the Republic, and while the earnings on through business decreased over \$523,000 the earnings on local business increased over \$967,000. As compared with 1893 the increase in local freight earnings was 20.79 per cent. and in two years it was 43.54. Northbound traffic has been systematically encouraged in order to reduce empty car mileage, and now the figures of northbound and southbound earnings are very nearly equal.

There has been no material change during the year in the depth of water at Tampico Harbor. On the inner bar a minimum depth of  $24\frac{1}{2}$  ft. has been maintained and on the outer bar a depth of  $21\frac{1}{2}$  ft. There has been a steady increase of business to and from Tampico during the year. The tonnage of imports at that harbor in 1892 was 80,670; in 1893 115,813 and in 1894 it was 143,306. The tonnage of exports in the same years was 28,702, 54,717 and 48,780. The cost of the harbor works and property in United States currency, has amounted to \$2,830,-068, all of which has been advanced by the Mexican Cen-

The original concession from the the government obligated the completion of the line to the Pacific in 8 years. The Guadalajara Branch, the first section of this line was completed in 1888; but after due consideration not advisable to attempt s decided that it was carry the work further, and an application was made to the government for the cancellation of that part of the concession which has been done.

In conclusion the President says: "The results for the or conclusion the President says: "The results for the year 1894 if looked at from the basis of operation in Mexico have been very satisfactory. The traffic returns have been larger, the organization improved, expenses de creased and the road equipment maintained in excellent physical condition." We should say that the one great difficulty under which the road is struggling is one from which it will get no relief until the currency system of our own country is firmly settled.

Grand Trnnk.—The half yearly report of the Grand Trunk Railway of Canada, for the six months ending Dec. 31, 1894, is now received in full. The chief results

Gross receipts		1893. £2,172,097 1,571,≈60
Net traffic receipts	£554,981 22,067	£600,237 25,876
Total Deficit, Chicago & Frand Trunk Detroit, Grand Haven & Milwaukee	£577,048 135,616 45,665	£626,113 12,221 36,387
Total net	2205 787	0577 505

The total deficit on the Chicago & Grand Trunk for the year 1894 was £179,350, but of this £43,734 was included under the head of advances to controlled lines.

The fixed charges of the Grand Trunk were £493,452

leaving a deficit from revenue of £97,684.

Of course there was a great falling off in the passenger traffic as compared with the same half of 1893. In numbers the decrease was over 905,000 and in percentage 21.5. In receipts the decrease was £180,461 and in percentage 22.11. It goes without saying that 1894 suffers by the comparison with the World's Fair year, when the Grand Trunk did a fine passenger business. The decrease in passengers carried when compared with the last half of 1892 was 337,230, and as compared with the last half of 1891, it was 434,302.

The tonnage of freight carried fell off as compared with the preceding half year 69,335 tons, or 1.62 per cent., while the freight receipts declined 2.85 per cent. As compared with the last half of 1892 the decline in tonnage was much more serious; the tons carried were 483,431 than in the last half of 1892. The ton-miles of local freight fell off 77 millions, but of through freight increased 41 millions, the net decre se being 36 millions in ton-miles. As compared with the 1892 half year, the decrease in through freight was 23 million ton-miles and in local freight 104 million ton-miles.

The working expenses decreased 10.99 per cent. as compared with the last half of 1893, and the train mileage 10.12, and the percentage of working expenses to gross earnings was 71.6 as compared with 72.36 in the year before. Obviously, very rigid economies were put in force to tide the company through this period of great ssion.

Of course the serious deficit on the Chicago & Grand Trunk is due to causes with which we are now all fa-milar; that is, added to the general depression were labor strikes during which traffic was for a time wholly suspended.

The President compares the losses of the Grand Trunk with those of the great lines on the American side of the border by way of showing to the stockholders how inevitable the falling off was. The only possibly measure of alleviation was in rigid economy and the company's pay rolls show a saving of not less than £161,000 as com

pared with 1893 and £188,000 as compared with 1992. Further saving was made in getting coal at less prices; also by taking advantage of the low price of steel rails to buy the year's supply at the lowest price that ever

Appended to the President's report is a long communistances under which the various affiliated lines were constructed, acquired or controlled, which is an interesting and valuable document.

Notwithstanding the obvious explanations of the very unsatisfactory condition into which the property ha fallen, the faction opposing the administration was able to procure proxies enough to defeat the Board, and therefore Sir Henry Tyler and all the directors have re signed. Doubtless it has been unfortunate for the property that the management has been so largely from London, and this is a fault which a powerful party among the owners has long been trying to remedy. Neverthe less, the management on this side has been able and re sponsible and the affairs of the company appear to have been conducted with great care as well as with ability. en conducted with great care as well as with ability.
is unquestionably not true that the operations of the road have been extravagant and its management incapa-ble and incompetent, as the stockholders' committee has asserted. On the contrary, we should say that the stock holders should be thankful that their los greater. The property is heavily capitalized, when we onsider the fact that a great deal of the line runs through a country which must for many years to come yield a thin traffic; that is, the aggregate capital account amounts to about \$90,000 a mile. In addition to this, the competition of the Canadian Pacific and of the roads on this side of the border is becoming every year more efficient and active. When to these conditions we add the present serious, but passing, difficulties of universal de pression, it seems, to say the least, a little unreasonab'e for the English stockholders of the Grand Trunk to ex pect their property to be prosperous.

Late in 1894 the directors of the Prussian state railroads decided, after the long series of trials that had been in progress, to use the compound locomotive for all through freight and express service, but not for suburban service or for trains with many stops. Following this decision, they have ordered 172 simple and 167 com pound locomotives to be delivered this year. This order consists of the following types: Ten two-coupled surbur ban locomotives, with two-wheeled trucks; 23 suburban two-coupled, with four-wheeled trucks; 10 six-coupled freight, and 129 six-coupled and eight-coupled, with four wheeled trucks, without separate tenders—these are small locomotives. The foregoing are simple engines. The compounds are: 50 four-coupled express passenger locomotives, with four-wheeled trucks; 46 six-coupled freight, without trucks; 26 six-coupled, with pony trucks; 25 eight-coupled, without trucks; 10 eight-coupled, with pony trucks, and 10 duplex, on the Mallet system. These orders show the extent to which com und locomotives are being introduced in Germany.

A special train of three cars, carrying officers of the was run over the Delaware, Lackawanna & Western on April 27, from Hoboken to Buffalo, 410 miles, in about eight hours, and, according to a press despatch, from Binghamton to East Buffalo, 197 miles, in 3 hours 13 min., which is equal to 61.24 miles an hour. This last is the best record that we know of for such a long distance, although the rate of speed is only a trifle faster than that made by the special train that was run from New York to Buffalo Sept. 14, 1891, by the New York Central, just before the Empire State Express was put on. That train had three cars, and the rate of speed, including stops, was 59.56 miles an hour; excluding the stops, one of which was for a hot journal (8 min.), the rate was 61.56. The longest distance that a train has traveled faster than 61.24 miles an hour, so far as we can find in the records, is 145.6 miles. This distance, Syracuse to East Buffalo, was made by the Empire State Express on May 19, 1893, at 61.96 miles an hour, including one stop of 6 minutes

A press dispatch from Denver states that the Interstate Commerce Commission, which held a session in that city last week, has given out a decision allowing the suspension of the long-and-short-haul law on freight rates for oranges from California to Atlantic seaboard cities. No particulars are given and it seems rather odd for a decision to be issued from Denver instead of Washington. The chief basis for such a concession is to be found, probably, in the destruction of the orange crop in Florida by frost. The only competition that the California growers now have to meet in New York is that of oranges imported from Mediterranean ports, and as the growers in Sicily are not very influential at Washington this decision can be made without causing war.

# LOCOMOTIVE BUILDING.

The Louisville & Nashville has just given an order to the Rogers Locomotive Works for 15 locomotives

The Duluth & Iron Range Railroad has just ordered our freight locomotives from the Schenectady Locomo-

The Missouri, Kansas & Texas Railroad, it is under-stood, will soon give out an order for a large number of locomotives, the number now being figured on being over 25 engines.

The Boston & Maine Railroad has just prepared speci fications for 600 new cars and is now asking bids for the cars. The order will include 200 box cars, 200 platforn cars and 200 coal cars of the Pratt patents.

The Lima Locomotive & Machine Co. has recently completed a 28-ton Shea locomotive for use on the Salt Lake & Mercur Railroad, a mining railroad in Utah. That company has had in service for some time a 20-ton Shea locomotive, which will now be used entirely for passenger traffic, the heavier engine being assigned to haul the freight trains.

The Missouri, Kansas & Texas has this week ordered 17 locomotives from various firms. The Baldwin Locomotive Works have secured eight, the Brooks Works five, and the Richmond Locomotive Works four. The company is to contract for 26 locomotives altogether, and the orders for the remaining 9 will be given out some time during this month.

The Choctaw, Oklahoma & Gulf Railroad has recently given a contract to the Baldwin Locomotive Works for eight locomotives. Four of these engines have been delivered to the company, two being freight and two passenger engines. The order included four freight engines and four passenger engines, and the balance will be delivered before July 15.

Detail drawings are being prepared at the Schenectady Locomotive Works for several 8-wheel passenger engines for the Chicago & Northwestern. Mr. Herr has recently spent some time at the works settling details. These engines will be powerful and fast, and will embody features bringing them quite up to the level of the best practice if not a little above it.

#### CAR BUILDING.

The Chicago & South Bend Railroad is in the market for 50 furniture cars.

The Philadelphia & Reading has just prepared spec fications for 1,000 new coal cars and the company is no ready to receive bids for building the cars.

The Michigan Central is having built a number of furniture cars, and is also having built for the American Express Co., three horse cars for the shipment of valuable horses.

The Cleveland, Cincinnati, Chicago & St. Louis has recently asked bids for three new postal cars to be 60 ft. in length. They will be lighted by Pintsch gas and have steam heat.

The Atlanta & West Point Railroad has received the first of a lot of passenger cars being built for that railroad by the St. Charles Car Co. That firm also has a contract for building 100 ventilated fruit cars for the same railroad which will soon be ready for delivery.

The Missouri, Kansas & Texas order, the award of which has been delayed so many months, was finally given out last week. The Madison Car Co., secured 1,300 of the cars, the order including 700 furniture and 600 c bal cars. The Missouri Car & Foundry Co. was awarded 8.00 box cars. It is understood that an order for passenger cars will soon be given out by the company.

The Choctaw, Oklahoma & Gulf Railroad is understood to be in the market for a considerable amount of car equipment. Probably about 500 stock cars will be ordered as well as 10 passenger cars and several express cars and combination cars. The officers of the company in Philadelphia where the general offices are located, decline to give any particulars as to this matter.

cline to give any particulars as to this matter.

The Columbus, Hocking Valley & Toledo Railroad has just closed a contract with the Pullman Car Co. for building 1,000 coal cars of 30 tons capacity. The amount of the contract is said to be about \$200,000 and the cars are to be delivered at various times during the summer. The expectation of increased business and revenue from the coal fields of the company in Ohio through the recent organization of the Ohio Coal Association was the reason for placing the order at this time.

# BRIDGE BUILDING.

Columbus, O.—The engineers of the Columbus, Hock-ng Valley & Toledo Railroad have just prepared plans for two new bridges to be constructed on that line dur-ing the coming summer.

Denver, Col.—The Youngstown Bridge Co., has the contract for the important Broadway bridge in Denver. This bridge is to be the full width of the street, 100 ft., and is to consist of 125 ft. girders.

The contract for the re-erection upon cylinder foundations of the iron bridge over Cherry Creek at Broadway, has been awarded to the Bullen Bridge and Construction Co., of Pueblo, Col.

Dudley, Mass.—Two new iron bridges will shortly be onstructed at Quinebaug.

Baltimore, Md.—An ordinance authorizing Wyatt Owen to build a bridge from the Baltimore county shore of the Pataps:o river, to connect with Light street bridge, has passed the City Council.

Binghamton, N. V.—An iron bridge is to be constructed at the entrance of Ross Park. It will be 20 ft. long, 50 ft. wide, having a 6-ft. sidewalk. The calculations will be on the basis of 100 lbs. to the square inch. The bridge is on a skew.

Buffalo, N. Y.—The Board of Public Works has opened bids for the erection of a bridge 83 ft. wide on Niagara street, over Scajaquada Creek. The Buffalo Structural Steel Works was the lowest bidder at \$8,400, and the Detroit Bridge & Iron Works the highest, at \$10,850. There were eight bidders.

A new iron bridge will shortly be constructed over the Buffalo River at Michigan street. Bids have been asked for until May 7.

Callicoon De, ot, N. Y.—A project for a \$30,000 bridge over the Delaware River is being discussed, and sub-scriptions are being raised.

Chestertown, Md.—A truss bridge will be built over Price Creek, in Kent County. Bids have already been asked for.

Chicago, III.—The Fitz-Simons-O'Connell Co. has been awarded the contract for a stone bridge over 59th stre-t in Jackson Park at a price of \$89,000.

The contract for the superstructure of the Fullerton avenue draw bridge, has been awarded to the Chicago Bridge & Iron Co., at \$11,694.

Bridge & Iron Co., at \$11,694.
Cincinnati, O.—County Engineer F. S. Krug has submitted to the Board of County Commissioners plans and estimates for a parabolic truss bridge over Mill Creek on Spring Grove avenue.
The Baltimore & Ohio Southwestern has just let contracts for 16 new iron bridges to the Union Bridge Co. Four of the new structures will be erected on the Ohio Division and 12 on the Mississippi Division. The amount of the contract is given as \$180,000,

Duluth, Minn.—Work has begun on a \$600,000 bridge between Duluth and Superior. It will have a single rail-road track. There will be two fixed spans and a draw of 420 ft. full span. The bridge will be 1,006 ft. over all.

Fredericton, N. B.—One of the piers of the railroad bridge over the St. John River was damaged by an ice jam last week to an extent of \$3,000. The bridge is owned by the Fredericton & St. Mary's Bridge Co.

Hambu g, N. Y.—An iron bridge with a span of 120 ft. is being erected at this place by the Penn Bridge Co.

Hamilton, Ont.—The Board of Works has granted permission to the Toronto, Hamilton & Buffalo Railroad to erect a bridge over Aberdeen avenue, with two intermediate steel supports.

Hill County, Tex.—Contracts for five spans of ridges in this county varying in length from 60 ft. to 5 ft. have recently been given to the Penn Bridge Co., f Beaver Falls, Pa.

Houghton, Mich.—Proposals are wanted by R. H. Hields, County Clerk, until May 7, for constructing the abstructure and superstructure of a steel bridge across ortage Lake.

Houston, Tex.—The Clear Creek draw span 130 ft. in length, on the Galveston, Laporte & Houston Railroad is now under contract with the Missouri Valley Bridge & Iron Works, of Leavenworth, Kan. This bridge gives 50 ft. clear opening. The bridge at Galveston Bay which is also a draw span, will be 210 ft. long and will give 85 ft. clear opening. The contract for this bridge has not yet been awarded. A bridge of 250 ft. in length will be built on the line of this road at Buffalo Bayou.

on the line of this road at Buffalo Bayou.

Indianapolis, Ind.—The Youngstown Bridge Co. has in its shops at Youngstown, O., a heavy girder span for a bridge being erected at Indianapolis.

The contract for the Pratt street canal bridge has been awarded to the Youngstown Bridge Co., of Youngstown, O. The bridge is 66 ft. span and 24 ft. wide.

The contract for the 75-ft. bridge over Pleasant Run at Spruce street has been awarded to the new Columbus Bridge Co., of Columbus, O., the bid being \$2,460.

Kalamazoo, Mich.—A new iron bridge across the Kalamazoo River at Mills street is proposed.

Lake Erie & Western Railroad.—A contract has been made, it is reported, for three through pin-connected spans of 158 ft., and two deck plate girders, 60 ft. each, with the Edge Moor Bridge Works.

Leavenworth, Kan.—Proposals will be received until May 11 for building three iron bridges near this place. Address J. W. Niehaus, County Clerk.

Meridian, Miss.—Proposals will be received until May for a bridge on the Toonizuba & Livingston road near raham's Crossing. Address B. V. White, Clerk of upervisors, as above.

Montreal, Que.—The cost of excavation necessary for the Notre Dame street bridge to be built in connection with the new east end station has been estimated at \$120,000. This work, together with the building of the bridge, is to be carried out by the city.

New Orleans, La.—The Penn Bridge Co. has been awarded the contract for a drawbridge to be erected by the city of New Orleans, which will have a span of 165 ft.

Norristown, Pa.—The County Court has appointed a jury to determine upon the site for the proposed bridge over Story Creek at West Norristown. The cost of the structure is estimated at over \$22,000, and as the project has so far met with little opposition the erection of the structure will undoubtedly be authorized.

Owensboro, Ky.—It is reported that a bridge will be built over the Panther creek at Curdsville, to be 165 ft.

Pittsburgh, Pa.—A 620-ft. steel bridge is to be built ver Panther Hollow in Schueley Park. The main span ill be 360 ft. in length.

Plymouth, Ind.—Proposals will be received until May 10 for constructing a bridge across Tippecanoe River near Ilion. Address O. R. Porter, County Auditor.

Quebec, Que.—The contract for the bridge to be constructed over the St. Anne River, under the direction of the Provincial Department of Public Works, will be given out shortly. For the work the Government has subscribed \$9,500 and the municipality \$15,000.

Rock 1sl and 1ll.—The city has been ordered by the government to build a draw span in the bridge over the Rock River. The cost of this improvement will be about \$10,000. It is also proposed to raise the bridge 28 ft. 2 in., giving it a height of 40 ft. above the river.

Shelby, Al. .- A single span bridge of 100 ft. is being rected by the Penn Bridge Co. for the county authori-

st. Paul, Minn.—The Gillette-Herzog Mfg. Co., of Minneapolis, has been awarded the contract for the superstructure of the Como avenue bridge.

Syracuse, V. V.—The bill appropriating \$10,000 for the erection of a canal bridge at Genesee street has just been signed by Governor Morton and become a law.

Texas & Pacific.—Four of the iron bridges to be built this season by the Texas & Pacific on its line west of New Orleans are under contract in the shops of the Youngs-town Bridge Co., at Youngstown, O.

Thomaston, Conn.—The Berlin Iron Bridge Co., of East Berlin, Conn., is putting up an iron bridge at Thomaston, consisting of two plate girder spans, each 60 ft. long, with a réadway 22 ft. wide and two sidewalks each 6 ft. wide. The bridge will be made entirely of iron and concrete, no woodwork being used in the construc-

Topeka, Kan.—The Chicago, Rock Island & Pacific Railroad proposes to do considerable work during this season in replacing wooden bridges on its lines through Nebraska with iron structures. Chief Engineer Parker has already prepared plans for a number of new structures.

ures.
Ukiah, Cal.—Bids will be received up to July 3, for a bridge across Rancheria creek on the line of the county road from Boonville to Point Arena, for a bridge across Hornbrooks creek near Covelo, and for a bridge across Russian River near Calpella. Address John Flanagan,

Versailles, Ind.—Proposals are wanted until June 7 for a highway bridge over Laughery Creek in Delaware township. Robert R. White, Auditor, should be addressed.

West Chester, N. Y.—The bridge over the West Chester creek at Main street will probably be replaced by a new iron bridge, 40 ft. wide, to cost about \$25,000.

Winnepeg, Man.—The time for receiving proposals for the erection of the steel bridge at Osborne street, has been extended until May 23 by the Board of Public Works.

#### PERSONAL.

—Mr. Jesse Waters has been appointed Superintendent of the Midland Terminal Railroad in Colorado, vice N. H. Pease, who retired May 1.

-Mr. William S. Ellis, Treasurer of the Ellis & Lessig eel & Iron Co., of Pottstown, Pa., died suddenly last ek while fishing near that town.

—Mr. R. M. Rogers, formerly General Manager of the Hicks Stock Car Co., has been appointed Traffic Man-ager of the Eastman Line of stock cars.

Mr. A. W. Dickinson, recently the General Manager of Missouri Pacific Railroad, is reported to be danger-ly ill at his home, near Seymour, Ind.

—Mr. J. E. Rockwell has assumed his new duties as Secretary of the Southern Passenger Association under Chairman Finley, recently Freight Traffic Manager of the Great Northern.

—Mr. H. M. Burgand, who for nearly 20 years has been the local ticket agent of the Western Maryland Railroad, at Baltimore, has been promoted to the position of Pur-chasing Agent of the road.

—Mr. Frank Bowes, Assistant General Passenger Agent of the Illinois Central, has been appointed General Freight Agent of the Southern lines of that company, vice Mr. D. B. Morey, resigned.

—Mr. C. H. Smith has been appoin ed Receiver of the Pittsburgh, Marion & Chicago Railroad, in operation from New Galilee, Pa., to Lisbon, O., 25 miles. Mr. Smith has been General Manager of the road.

—Mr. J. L. Little, of Rochester, N. Y., has been appointed Division Engineer of the western division of the Eric Canal, to succeed John Bisgood, deceased. Mr. Little has served lately as engineer with the east sewer commission of Rochester.

—Mr. James S. Davant, who has been Assistant General Freight Agent of the Memphis & Charleston for a number of years, has been chosen Freight Commissioner of the Memphis Freight Bureau and has made a contract to fill the office for three years from May 1.

— Mr. E. St. John, well-known as the General Manager and Vice-President of the Chicago, Rock Island & Pacific for 25 or 30 years past, and now Vice-President of the Sea-board Air Line, has been presented with a gold watch by the locomotive enginemen of the Rock Island.

—Mr. J. J. R. Croes has been appointed by Governor Morton "Commissioner of the State of New York for the acquisition of the Palisades of the Hudson by the United States." The appointment of this commission is the first important official step taken in the great work of preserving the Palisades.

—Mr. Frank Bowes, Assistant General Passenger Agent of the Southern Division of the Illinois Central Railroad, has been appointed General Freight Agent to succeed D. B. Morey, resigned, the change to take effect May 1. W. Kellond, now chief clerk to General Man ager and Vice-President Harahan, has been appointed to May 1. W. Kellone ager and Vice-Presi succeed Mr. Bowes.

—Mr. C. T. Bailey has been appointed Chief of the Railroad Police of the Old Colony System of the New York, New Haven & Hartford, with headquarters at Park Square station, in Boston. Mr. Bailey has been in the service of the Old Colony for several years, and was one of the officers imprisoned last year for connection with the Abington riot.

—Mr. E. D. Wright, Superintendent of the Southwestern Division of the Chicago, Milwaukee & St. Paul Railroad, at Racine, Wis., has been transferred to the Kansas City Division of the same road. Mr. J. C. Cable of Chicago, who is now Superintendent of the Milwau kee and Council Bluffs divisions, will be his successor, and will become superintendent of the three divisions.

—Mr. J. B. Cavanaugh, General Freight and Passenger Agent of the Evansville & Terre Haute Railroad, has resigned. He has held the office since November, 1898, succeeding Mr. Felton, who had accepted a similar office with the Chicago & Eastern Illinois. Mr. Cavanaugh went to the Evansville & Terre Haut: road from the Wisconsin Central, of which he had been General Freight Agent for some years.

—Mr. Robert Casson has been appointed General Auditor of the Western Maryland Railroad Company to succeed the late Henry G. Wood. Mr. Casson entered the service of the company shortly after Mr. Wood was made General Auditor, in August, 1893, as Chief Clerk in the auditor's office. Prior to his connection with the Western Maryland, Mr. Casson was employed in responsible clerical positions with the Grand Trunk Railroad.

—Mr. Charles F. Gardner has been appointed Superintendent of the Pittsburgh and Clearfield & Mahoning divisions of the Buffalo, Rochester & Pittsburgh to succeed Mr. James Bruce, resigned. He has held a similar position on the Pittsburgh, Akron & Western, during the past two years. Previously he was Suprintendent of the Zanesville & Ohio River Road, and before that Trainmaster of the Cincinnati & Muskingum Valley Road.

master of the Cincinnati & Muskingum Valley Road.

—Mr. D. B. Morey, General Freight Agent of the Southern Lines of the Illinois Central Railroad, with headquarters at New Orleans, has resigned that position, his resignation taking effect on May 1. He had held that title for more than 10 years, assuming it when the Chicago, St. Louis & New Orleans was incorporated in the Illinois Central. He had been General Freight Agent of that road and had previously been on a number of other important lines in the South.

—Mr. H. M. Rowell, one of the oldest officers of the Boston & Maine Railroad and at present Superintendent of Telegraph, has resigned that office and has been succeeded by S. A. D. Forrestal, who is now Chief Train Despatcher of the Western Division of the railroad. Mr. Rowell was for a long time connected with the Eastern Railroad, and when that railroad became a part of the Boston & Maine he continued in the service of the consolidated company as Superintendent of Telegraph.

—Mr. Thomas M. Wheeler, who died in New York City on April 27, at an advanced age, was in early life engaged in important engineering capacities on the surveys of many of the principal railroads of Indiana and Illinois. He was connected with the United States Survey for some time, but for many years past had resided in the East and was engaged in the shipping and warehouse business in New York. He at one time owned an extensive interest in the great Atlantic Docks in Brooklyn.

—Col. Alfred Sims, the General Manager of the East Broad Top Railroad and of the Rock Hill Iron & Coal Co., of Pennsylvania, died at his home in Huntingdon last week in his 69th year. Colonel Sims had held the management of the East Broad Top Railroad in Eastern Pennsylvania for the last 23 years, serving as Superintendent, and more recently as General Manager and Chief Engineer. Before going to that company he had been engineer on various Canadian railroads, and for a time was Chief Engineer of the Delaware & Hudson Canal Co.

Canal Co.

—Mr. Henry L. Shute, General Traffic Manager of the Minneapolis, St. Paul & Sault Ste Marie Railroad, has just resigned, and it is announced that the office will be abolished. Mr. Shute has been connected with the "Soo Line" in charge of its freight traffic since it was organized. He was made General Freight Agent in 1886, becoming General Traffic Manager in 1888 when that office was created, and he has since continued in that position. He was at one time General Freight Agent of the Central Iowa Railroad, and held important positions in the freight departments of other western railroads.

—Mr. Charles A. Browne has just been elected Treas-

freight departments of other western railroads.

—Mr. Charles A. Browne has just been elected Treasurer of the Mexican Central Railroad, and will have his headquarters at Boston, Mass. Mr. Browne has been with the Mexican Central for about nine years, being located at the offices in the City of Mexico, and for some time past he has been Assistant Treasurer. He has already assumed the duties of his new position. Mr. S. W. Reynolds, whom he succeeds, has held that office for a long term of years. After the death of Mr. Wade, in 1892, he was elected President of that company and acted in that capacity until the appointment of Mr. A. Robinson to the office. Since then he has been Vice-President and Treasurer. He now resigns to enter into other business at Boston.
—Sir Charles Rivers Wilson will probably be the next.

other business at Boston.

—Sir Charles Rivers Wilson will probably be the next President of the Grand Trunk Bailroad. succeeding Sir Henry Tyler, who has just resigned. He has been put forward for this office in the circulars of the Shareholders' Committee which has succeeded in securing a majority of the proxies of the company's stock, and he will undoubtedly be elected President at the adjourned meeting of the shareholders, which is to be held on May 7. It will be remembered that he spent some months in this country last fall investigating the Central Pacific Railroad and its relations to the Southern Pacific on behalf of the English bondholders. He has long been prominent in financial circles in England, and has held many important positions of honor and trust under the English Government. He was one of its commissioners in readjusting the Egyptian debt question.

—Mr. George W. Ristine who has just been appointed

—Mr. George W. Ristine who has just been appointed receiver of the Colorado Midland Railroad on the reversion of the lines of that company to the bondholders, is at present the General Manager of the United States Car Company, having been appointed to that position in August, 1892. Mr. Ristine in taking the management of the Colorado Midland, will have the advantage of being from the start thoroughly familiar with the conditions which he will have to meet. He was for many years located in Colorado and was at various times assistant to the president of the Denver & Rio Grand Railroad, Assistant General Manager of that railroad, and Traffic Manager of the Atlantic and Pacific. He was Commissioner of the old Transcontinental Association and tas held many positions in the freight departments of Western roads and as Commissioner of Traffic Associations, In 1886 he became General Manager of the Erie Dispatch Fast Freight Line at Chicago and remained in that office until 1891.

—Sir Henry Tyler and the present Board of Directors

—Sir Henry Tyler and the present Board of Directors of the Grand Trunk Railroad resigned their offices at a meeting of the stockholders in London on April 30. Sirce the last half yearly meeting of the shareholders of the Grand Trunk Railroad the opposition to Sir Henry Tyl rr and the present management of the company has been very active. At the last half yearly meeting of the shareholders a committee was appointed to go over the accounts of the railroad on behalf of the stockholders, and since the publication of the report of the auditor engaged by this committee, the criticism of the management has been very bitter, although the report itself recommended no changes in the company's system of accounts. Sir Henry Tyler, at the meeting of April 30, made a long and vigorous speech in defense of the policy pursued by him and the directors in recent years. He stated that a majority of the stockholders hav ng given proxies against him, he had placed his resignation in the hands of the company, and the directors had decided upon the same action. He insisted that many of the proxies had been secured by means of an unfair and misleading circular.

—Hon. Franklin Fairbanks, a member of the Fair-

many of the proxies had been secured by means of an unfair and misleading circular.

—Hon. Franklin Fairbanks, a member of the Fairbanks family, which has been so prominent in the manufacturing and political history of Vermont, died at his home at St. Johnsbury, Vt., on April 24, aged 67 years. Mr. Franklin Fairbanks, like other members of his family, had been largely interested in various railroad enterprises in New England, especially in Vermont, and was for a long time director of the St. Johnsbury & Lake Champlain Railroad. He was President of the Vermont International Telegraph Co., a director of the Boston & Montana, and other mining companies, of the Maritime Canal Co., of Nicaragua, and of other industrial concerns in this country, besides holding positions on the managing boards of a great number of educational and charitable organizations. He was associated with his brother in the construction of the St. Johnsbury & Lake Champlain Railroad, which is operated by the Central Vermont Railroad, and he had continued as a director of the company since its organization. He was in recent years the head of the firm of E. & T. Fairbanks & Co., the manufacturers of the Fairbanks scales, succeeding the presidency of the corporation on the death of his brother, Governor Horace Fairbanks, in 1888. He had been a partner in the firm founded by his father since 1856, and became Vice-President when the corporation was formed in 1856.

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# ELECTIONS AND APPOINTMENTS.

Baltimore & Ohio Southwestern.—J. F. McCarthy has been appointed General Traveling Passenger Agent of the road, vice Thomas A. Garrigan, resigned. He has been General Western Passenger Agent for the Wabash at San Francisco since 1890.

at San Francisco since 1890.

Cedar Falls & Minnesota.—The stockholders of the railroad at their annual meeting in Dubuque, Ia., this week, elected the following directors: W. J. Knight, Charles T. Hancock, D. D. Myers and C. E. Wales, of Dubuque; E. H. Harriman, J. Kennedy Tod, W. S. Tod and J. L. Meyers, of New York, and John Dunn, of Chicago. Executive officers were chosen as follows: President, W. J. Knight; Vice-President, John Dunn; Secre-

tary and Treasurer, C. H. Booth, and Assistant Secretary, Charles H. Wenman.

Chicago, Peoria & St. Louis.—Horace S. Reaven has been promoted from Master of Transportation to the post of Superintendent of the railroad, succeeding F. L. Tompkins.

Tompkins.

Gloversville & Broadalbin.—The directors of this company, recently organized in New York, are Henry C. Finch, J. Wallace Cleveland, James P. Rosa, James T. Bradford, of Broadalbin; James Shanahan, Jr., of Tribes Hill, N. Y.; William Argersinger, W. D. Ferres, of Johnstown; Frank Burton, Hiram Darling, John Martin, John H. Richardson, Henry C. Day and John B. Judson, of Gloversville, New York. The company's principal office will be in Gloversville.

Grand Trunk.—M. C. Dickson, District Passenger Agent, has been given charge of the whole Western Division of the line from Belleville to Windsor, Ont. William Keating, Assistant to the late Philip Slatter, has received the appointment of City Passenger Agent at Toronto.

International & Great Northern.—R. G. Scott has been appointed roadmaster of the International & Great Northern for the division from Laredo to Taylor, Tex., vice I. L. Thomas who has resigned after holding the position many years.

vice I. L. Thomas who has resigned after holding the position many years.

Lake Erie & Western.—A reorganization of the freight department has been recently announced by General Freight Agent Chamberlain, and the following appointments have been made: The title of James Leeming, Assistant General Freight Agent, will be changed to First Assistant General Freight Agent, will be changed to First Assistant General Freight Agent. He will have charge of the details of through traffic. Robert M. Parker has been appointed Second Assistant General Freight Agent, with office at No. 21 Cortlandt street, New York City, in charge of local traffic. J. M. Horton has been appointed Division Freight Agent of the Eastern and Delaware Divisions, with office at Chambers Street Ferry, New York City, vice R. M. Parker, promoted; W. C. Buck, Division Freight Agent, Elmira, has charge of the Susquehanna, Tioga and Jefferson Divisions. George A. Bowman appointed Division Freight Agent of the Rochester and Buffalo divisions, with headquarters at Rochester, vice J. M. Horton, transferred. J. Deuel, Division Freight Agent, Buffalo, has charge of Buffalo, and the Niagara Falls and Lockport Branches. F. J. Goodfellow, Division Freight Agent, Bradford, Pa., has charge of the Western and Bradford divisions. The offices to which Mr. Leeming and Mr. Parker have been appointed have just been created.

Lehigh Vallen.—C. A. Blood, Division Freight Agent.

Lehigh Vallen.—C. A. Blood, Division Freight Agent of the Lehigh T. .lley Railroad, at Pottsville, Pa., has had his territory enlarged and his office removed to South Bethlehem.

Louisville, Evansville & St. Louis.—The announcement of the appoinment of O. W. Putnam to be Superintendent of this company was an error. Mr. Putnam has been Master of Trains, with headquarters at Princeton, Ind., and will continue to hold that title, though assuming some of the duties of the Assistant Superintendent who has recently resigned.

Mexican Central.—E. W. Baker, who has been connected with this road for some time as Purchasing Agent at Boston, has tendered his resignation. B. E. McIntyre has been appointed to succeed him.

At a meeting of the Board of Directors of this company on April 25 Mr. Chas. A. Browne was elected Treasurer and Transfer Agent, in place of Mr. S. W. Reynolds, resigned.

urer and Trans nolds, resigned.

Minneapolis, St. Paul & Sault Ste Murie—Henry L. Shute has resigned the position of Traffic Manager of the company. This position will be abolished and William L. Martin, General Freight Agent, will have charge of the freight traffic.

New York Central & Hudson River.—At a meeting of the directors in New York City last week Chauncey M. Depew was reelected President, C. C. Clarke, First Vice-President; Horace J. Hayden, Second Vice-President; H. Walter Webb, Third Vice-President; E. V. W. Rossiter, Treasurer, and E. D. Worcester, Secretary.

Northern Pacific.—A. G. Postlewaite, Land Commissioner of the St. Paul & Northern Pacific Railroad resigned that office in April and the land department of that railroad will hereafter be in immediate charge of the Land Commissioner of the Northern Pacific, Mr. W. H. Phipps. This change is in line with the re-organization of the land department now being made which was begun by the retirement of the late Paul Shulze, who was General Land Agent of the company with head-quarters at Tacoma, Wash. Since the retirement of that officer a number of minor changes have been made among the officers of the land department in Washington.

Oregon City & Wilholt Springs.—This company recently received a charter in Oregon, incorporators being F. K. Arnold, Charles H. Caufield, H. H. Johnson, Sidney Smyth and L. L. Porter. The principal office will be at Oregon City, Ore.

Racquette River.—The incorporators of this company, recently organized in New York, are, C. A. Arnold, A. J. Voyer, W. P. Shaw, M. J. Canaday, John Wagner, Clifford D. Gregory, of Albany; G. I. Humphrey, of Saratoga; E. R. Johnson, of Bath; F. S. Wonham, of New York.

Texas & Pacific.—Major Robert Strong has been pointed General Agent of the railroad in New Orles La.

La.

Union Pacific.—The only change in the list of directors made at the annual meeting in Boston on April 24, was the election of Oliver W. Mink, a Vice-President and Receiver, to succeed Gardner M. Lane, resigned. The Directors reelected Alexander E. Orr, Chairman of the board; S. H. H. Clark, President; Edwin F. Atkins, Vice-President; Oliver W. Mink, Second Vice-President and Controller; Alexander Millar, Secretary and Assistant Controller; James G. Harris, Treasurer, and Frank D. Buttrick, Assistant Treasurer and Transfer Agent. Mr. Oliver W. Mink was chosen to succeed Mr. S. Endicott Peabody on the Executive Committee; S. Endicott Peabody succeeds Gardiner M. Lane on the Finance Committee, and Government Director J. Nelson H. Patrick succeeds Government Director Joseph W. Paddock, de ceased, on the Land Committee.

### RAILROAD CONSTRUCTION. Incorporations, Surveys, Etc.

Baltimore & Cumberland.—It was expected a month ago by those interested in the building of this railroad east of Cumberland, Md., that the contracts for a large part of the work, if not for the entire line, would be road south of Fredericksburgh, Va., last week. W. Mc.

given out before the summer months. This idea has now been abandoned and the officers say that the plans for the construction of the railroad are again held in abeyance indefinitely. It is not probable that any definite action will be taken to begin the construction of the railroad immediately or for many months. The project, as often stated, is for an extension of the West Virginia, Central & Pittsburgh Railroad, east of Cumberland, to Hagerstown, Md., a distance altogether of something like 185 miles. The line has been surveyed several times, the most recent surveys being by Mr. Chauncey Ives, Chief Engineer of the Cumberland Valley Railroad, and it is understood that the route of the road has been formally adopted by the railroads. The work was all ready to be put under contract more than a year ago, when the financial disturbance made it advisable to delay such an important undertaking. The plans for the railroad, which though a distinct corporation, will be controlled in the interest of the West Virginia, Central & Pittsburgh, have been under the direct charge of three of the directors of that company, President T. B. Davis, R. C. Kerens and Hon. S. B. Elkins.

C. Kerens and Hon. S. B. Elkins.

Bangor & Aroostook.—Aroostook County in Maine at an election held last week voted to issue the bonds of the county to the extent of \$228,000 in favor of this railroad company, to aid in the construction of the proposed Ashland branch. The main line is now built and in operation through the lower part of Aroostook County to Houlton, and thence more directly north near the eastern boundary line of the county to Presque Isle. The Ashland branch is to be about 40 miles long and will branch off from the main line at Oakfield, a station 18 miles east of Houlton and extend thence north to the town of Ashland on the Aroostook River at a point about 20 miles directly east of the present northern terminus of the railroad at Presque Isle. The Ashland branch is built mainly with the idea of reaching a very valuable timber country.

Chester, Farmington & Western.—A charter for

Chester, Farmington & Western.—A charter for this company was secured in Missouri last week to build a road about 50 miles west from the Mississippi River opposite Chester, Ill. The proposed road is to start from a point in Perry County, Missouri, on the Mississippi River, opposite Chester, Ill., and extend nearly directly west through St. Mary's, in Ste. Genevieve County: Farmington, in St. Francois County; and Irondale, in Washington County, with a branch north to the city of Ste Genevieve, on the Mississippi River. The stockholders are A. H. Hester, P. J. Cooper, Leon Bogy, John Bogy, George J. Cole, Warwick Hough and others.

Gloversville & Broadalbin.—This railroad company was incorporated last week to build and operate a steam road from the village of Broadalbin west to a point near Warren's Crossing or Gloversville, on the line of the Fonda, Johnstown & Gloversville Railroad, a distance of six miles. The Kennyetto Construction Co. has been organized to build the road.

Jonesboro & Eastern.—This company was incorporated in Arkansas last week to build a railroad and toll bridge from near Jonesboro to the St. Francis River, 18 miles. The capital stock is \$145,000 and A. C. Broadway, J. H. Mangrum, N. F. Lamb and William Collins are the incorporators.

the incorporators.

Louisville, New Albany & Chicago.—The company has just completed the work of converting the narrow gage Bedford Branch to standard gage. This branch is about 41 miles long and extends from Bedford on the main line, a station above New Albany, northewest to Switz City, Ind., on the Indianapolis & Vincennes Division of the Pennsylvania. The preparations for changing the gage of this railroad were begun some time ago, and during 1894 the tunnel near Switz City was widened to permit of a second track being built through it, so that when work was begun this spring little remained to be done beyond relaying the rails. The old rails on the main line between Monon and Indianapolis, which were taken up as the new 75-1b, section was put in this spring, were relaid on the branch road.

Racquette River.—A charter has been secured by

Racquette River.—A charter has been secured by this company to build a steam read from Tupper Lake Post Office to Axton, Franklin County, in the Adirondacks, a distance of 10 miles. The Directors are C. A. Arnold, A. J. Voyer, W. P. Shaw, M. J. Canaday, John Wagner, Clifford D. Gregory, of Albany; George I. Humphrey, of Saratoga; E. R. Johnson, of Bath, and F. M. Wenham, of New York City.

M. Wenham, of New York City.

Southern Pacific.—The second track work, west of New Orleans, to be carried out this summer and already referred to in this column, is on the Morgan's Louisiana & Texas division, from Bayou Sale station at mile post 96, west of New Orleans to Olivier, 121 miles west, a distance of 25 miles. There are large numbers of sugar mills and saw mills on this section, which makes the piece of track in question a very busy one in the fall and winter months, so busy that it requires two or three switch engines transferring bulk cane from plantation switches and from freight trains into the different refineries. The work is now under construction and the contract is in the hands of Downey Bros., of Houston, Tex.

Tex.

Thurber & Llano Coal and Iron.—The projectors have been successful in securing the right of way for practically all of the first section of the railroad south of the coal mines at Thurber, Tex., as far as Stephenville, Tex., and it is now the intention to let the contract for grading this part of the railroad without any further delay. This section will be about 28 miles long, reaching from the mines to a connection with the Fort Worth & Rio Grande Railroad. Several propositions to build the railroad have already been made to the projectors, one contractor being ready to go ahead and complete the railroad between Thurber and Stephenville if he is assured that the amount then due him when his contract was finished would be ready. Various other propositions to build the railroad have been made conditioned on the company making payments to the contractors on the completion of each short section. The projectors state that now that the right of way has been secured by them they are prepared to go ahead with the construction, and will shortly make an agreement with reliable contractors to build the railroad. The company owning the mines at Thurber, Tex., is largely concerned in building the railroad which will give an important outlet to those mines to the south. Mr. Henry N. Smith, of Stephenville, Tex., has charge of the work and will give jout the contract.

Union Pacatic. Denver & Gulf.—The contract for the

Union Pactic, Denver & Gulf.—The contract for the grading of the extension from Forbes to Walsenburg, Colo., has been awarded by Receiver Trumbull to A. Sheridan, of St. Joseph, Mo. The estimated cost for the 19 miles is \$50,000. This line is to form a portion of the new road between Trinidad and Pueblo.

D. Lee is assistant engineer. The survey is to be continued south of Fredericksburgh through what is called the Northern Neck of Virginia between the Potomac and Rappahannock rivers to a point at tide water on Chesapeake Bay. There have been several projects recently for the construction of the line through this Northern Neck, but it is understood that an agreement has been made for a union of the different projects, and that there is now said to be a very good chance for the railroad being built.

Washington Rnn.—This company was incorporated a Pennsylvania last week to build a road six miles in ength in Fayette County, from Dayton Station to the hio & Baltimore Short Line. W. Harry Brown, of ittsburgh, is President.

Onto & Battimore Short Line. W. Harry Brown, of Pittsburgh, is President.

Winnipeg & Hudsons Bay.—It is announced that Donald Grant and Foley Bros. & Guthrie, well known contractors of Minnesota, have sigmed a contract with the Winnipeg & Great Northern Railway Co. for building 250 miles of road toward the Hudson Bay country. The first 125 miles from Winnipeg north are to be built this year, and the line completed by January, 1897. The entire distance is prairie country and the work is not at all heavy. The road will open to the stelement what is known as the Dauphin district of Manitoba. This first section of the new road will run for its whole length between Lakes Manitoba and Winnipeg, which stratch for nearly 500 miles in a north and south direction, and are about 50 miles apart. Grant, Foley Bros. & Guthrie will sub-contract nearly all the work, but expect to furnish materials to many sub-contractors. The statement that the road is opening a way to Hudson Bay is an error, for it is but the first quarter of the distance from Winnipeg to the mouth of Churchill River, where the Bay will be eventually reached. The Dominion government sub-sidizes this road to the extent of \$10,000 a mile of line built, and gives 6,400 acres of land a mile. It also gives an additional subsidy of \$80,000 a year for the next 20 years.

Whippany River.—The extension of the Rockaway Valley Railroad beyond Morristown, N. J., has been undertaken by a distinct corporation organized under the above title. This railroad is now being graded under the direction of J. A. Melick, who is the President and Engineer. He is also the General Manager of the Rockaway Valley Railroad. The line will be only four miles long, extending from Morristown, where it makes a connection with the Delaware, Lackawanna & Western, to the town of Whippany, N. J. It is expected to complete the railroad by July I next, and it will then probably be operated by the Rockaway Valley Railroad through a lease or agreement.

### GENERAL RAILROAD NEWS.

Akron & Eastern.—This property is understood to have been recently purchased by P. B. Reighard, of Pittsburgh, a very wealthy oil dealer who will probably make some effort to complete at least part of the railroad. The company was organized during 1892 to build an extension of the Pittsburgh, Akron & Western which had then just been finished to Akron from the latter town east through Ohio to near Newcastle, Pa. That would require a construction of about 70 miles of new railroad and the work was begun near Akron during 1893. It was suspended during that year after about 20 miles of the road has been graded east of that town when the Pittsburgh, Akron & Western became financially involved and receivers were appointed. Since then no effort has been made to carry on the work, but it is stated that the section graded in that year is still in very fair condition.

Atlantic Short Line.—John R. Young, of Savannah has been appointed permanent receiver of the Macon & Atlantic Short Line in Georgia.

Central of New Jersey .- The report of earnings for

March is as follows: Gross earn		1894. \$895,258	1893. \$1,223,690
Oper. expen. and taxes	633,544	662,056	759,621
Net earn	\$406.304 £07/6 874.643	\$233,262 7376 678,768	\$464,069 621/6 1,216,005

Per cent, of expen. to earn. 60% 73% 6.3% Net earn., 3 mos. 74,643 678,768 1,216,065

Chicago & Northern Pacific.—Judge Jenkins, in the United States Court, has this week appointed A. L. Hopkins, of New York City, sole receiver of this property. He succeeds Messrs. R. P. Morgan, H. E. Howland and Warner Van Orden who have been joint receivers since the property has been under control of the Court. The appointment of a single receiver was made on the petition of a committee of bondholders, representing all but \$300,000 of the \$25,000,000 of bonds issued by the company, and the committee nominated Mr. Hopkins for the office. Some opposition was made before Judge Jenkins, to the appointment of Mr. Hopkins, by attorneys of the Present management, and General Manager Ainslee, of the Wisconsin Central, was suggested for receiver. The Farmer' Loan & Trust Company, through its attorneys joined in the request for the appointment of Mr. Hopkins and Judge Jenkins decided to accede to these requests. In announcing the appointment he stated that the receiver was not named on behalf of the bondholders, but to serve in the interests of the railroad and that he was not to represent any faction or take any part in any controversy between different interests. The Court recognized the expediency of having the receiver of such a property represented at the financial capital of the country.

country.

Choctaw Coal and Iron.—Edward D. Chadick and other former stockholders of the company have recently brought suit in the Philadelphia courts against Charles Hartshorne, J. C. Bullitt, of Philadelphia, and others of the present directors of the company to recover \$125,000 for a controlling interest in the property transferred to the defendants by Mr. Chadick and his friends in 1888. The plaintiffs in their petition cite that in December, 1888, they held all the stock of the railroad company, the par value of which was \$3,750,000. Mr. Chadick agreed in that year to transfer a controlling interest in the property to Mr. Hartshorne, the latter agreeing to raise a sum to complete the title to certain coal leases held by the railroad, Mr. Chadick securing bonds of the company amounting to \$125,000. The shares giving the controlling interest were deposited with a trust company of Philadelphia designated by the defendants. The old directors and officers resigned and new directors and officers resigned and new directors and officers selected by the defendants were elected. Various issues of bonds were made by the new directors, but Mr. Chadick claims that no payment has ever been made toward the sum agreed upon, and he now sues to recover the \$125,000 and interest.

Colorado Midland.—The bondholders on April 29,

Colorado Midland.—The bondholders on April 29, renewed their application to Judge Caldwell at St. Louis, for the appointment of a separate receivership, and on

April 29, Judge Caldwell granted the application, and appointed Henry Ristine, Receiver, in place of the Atchison receivers, Messrs. A. F. Walker, J. J. McCook and J. C. Wilson resigned.

Denver, Leadville & Gunnison.—The Gunnison division will be opened for traffic about July 1. The Alpine pass over the Continental divide has been abandoned for several years owing to the expense of operation, but Receiver Trumbull thinks that the line will pay expenses this season. About 40,000 new ties will be necessary to repair the line, and these were secured some time ago.

repair the line, and these were secured some time ago.

Grand Rapids & Indiana.—John F. Davidson, of Pittsburgh, and William H. Barnes, Trustees of the 5 and 6 per cent. mortgages, representing the 90 per cent of the obligations of the railroad owned by the Pennsylvania railroad, last week filed a bill in the United States Circuit Court at Grand Rapids, Mich., asking for the appointment of a receiver for the road pending foreclosure proceedings.

The company has defaulted on several issues of bonds and it has a floating debt of \$796,000 and contingent liabilities of \$100,000. For a long time foreclosure has been expected. The action is brought on a mortgage given Aug. 1, 1884, to secure \$3,000,000 due 1899, on which dedeaults in interest have been made, and of which \$2,975,000 are still outstanding. The Cincinnati, Richmond & Fort Wayne, Travers City Railroad and Bay View, Little Travers & Mackinaw Railroads, are covered by the action as leased lines or portions of the Grand Rapids & Indiana.

Knoxville, Cumberland Gap & Louisville.—The

Rapids & Indiana.

Knoxville, Cumberland Gap & Louisville.—The United States District Court at Nashville has been petitioned to issue a decree in favor of the holders of the receivers' certificates for the sale of this property. The motion is to be argued before the court at Caattanooga, Tenn., on May 11. It was made in the suit pending between the Central Trust Co., of New York, the trustee of the company's bonds, and the railroad company. The outstanding receivers' certificates amount to something under \$100,000, and were issued in 1893, principally to rebuild the bridges along the railroad. The line is about 74 miles long from Knoxville north to a connection with the Louisville & Nashville, at Middlesborough, Ky. It has been in control of the receivers since December, 1892, when Clarence Cary, of New York City, was appointed to that office and he is now operating the railroad.

Macon & Birmingham.—The sale of the Macon &

Macon & Birmingham.—The sale of the Macon & Birmingham Railroad, under foreclosure, has been post-poned until Nov. 2.

poned until Nov. 2.

Manhattan.—J. P. Morgan & Co., have purchased the company's 4 per cent. bonds, to be issued to take up the \$8,500,000 of New York Elevated Railway first sevens, which are redeemable at 105 after Dec. 31, 1895. The bonds will be sold in London. It is understood that the price the Manhattan Company is to receive is 95. It will require \$8,925,000 cash to redeem the sevens, and to net that amount about \$9,400,000 of the consol fours will have to be sold.

Mobile & Birmingham.—This railroad, extending from Mobile to Marion Junction, near Selma, Ala., was sold at Mobile, Ala., on April 27 and bid in by T. G. Bush, the receiver, representing the bondholders, for \$500,000. There was no other bidder. A plan of re organization has already been effected, providing for important improvements to the road-bed. The line is over 160 miles long, and was formerly operated as one of the East Tennessee, Virginia & Georgia lines, but was not included in the reorganization of that property by which it was transferred to the Southern Railway.

Pittsburgh, Marion & Chicago.—Mr. C. H. Smith, the present General Manager of this railroad, was last week appointed Receiver by the State Court in Ohio. The railroad operates only about 25 miles of road from New Galilee, a station near Beaver Falls, Pa., where it connects with the Pittsburgh, Fort Wayne & Chicago, west to Lisbon, O., where it makes a connection with the New York, Lake Erie & Western. Mr. F. W. Lockwood, of New York City, is President of the railroad company.

of New York City, is President of the railroad company. Texas, Louisiana & Eastern.—The sale of this property at foreclosure has been postponed from May to June 4, at Conroe, Tex. The original decree for foreclosure was entered in the United States Circuit Court at Galveston on March 22 last. The road has been in operation since 1893 from Conroe, in Montgomery County, Tex., easterly for a distance of about 31 miles, the present end of track being about seven miles east of Trinity River. The road has been graded up to that river. The receivers are Charles N. Putnam and Samuel Lazarus, the former of whom was President of the company and chiefly interested in the building of the line. The debt of the company includes receivers' certificates amounting to \$20,000, first mortgage bonds of \$155,000, second mortgage bonds of \$143,000, and about \$47,000 of other claims.

claims.

Utah Ceutral.—J. E. Bamberger, of Salt Lake City, and other local creditors have begun foreclosure suits under the receivers' certificates in Utah. These certificates amount to about \$100,000 and were issued in November, 1893, by the receivers, Clarence Cary and James McGregor. It is claimed that the certificates are overdue and that no interest has ever been paid on them. The court is therefore asked to make the certicates a first lien on the property and that the foreclosure be ordered under these certificates, the Central Trust Co., which some time ago began a foreclosure suit, having taken no steps to have the property sold since the filing of their suits.

Valley (Ohio).—The Reorganization Committee, of which Louis Fitzgerald is Chairman, announces that a majority of the consolidated mortgage bonds and a considerable number of the first mortgage bonds have been deposited with the committee. This committee is acting in the interest of the Baltimore & Ohio, which is the largest holder of the consolidated bonds, which were is sued to it for improvements made to the property.

# TRAFFIC.

# Traffic Notes

Sleeping cars are now run through between Galveston and Chattanooga over the Queen & Crescent and the Houston, East & West Texas.

The Philadelphia, Newtown & New York has reduced fares to meet the competition of the electric street lines. The former season tickets have been withdrawn and 50-trip tickets are now sold to Philadelphia from Wyoming avenue, at \$4.75; Cheltenham, \$5.75; Fox Chase, \$6; Rockledge, \$6.50. The new rates are about the same as those recently established by the Philadelphia & Reading on its Germantown line.

The Seaboard Air Line has secured a second injunction

The Seaboard Air Line has secured a second injunction against the Nashville, Chattanooga & St. Louis, which is said to restrain the latter from making any change in

freight traffic arrangements, prejudicial to the Seaboard Air Line, until the original suit can be decided by the United States Supreme Court.

The Baltimore & Ohio Southwestern is to put on a fast mail train from St. Louis to New York. It will leave St. Louis at 3 a. m., Cincinnati 11:45 a. m., and reach New York over the Baltimore & Ohio, and connections at 11 a.m., the next day. There will be a corresponding westbound train which will connect with the train leaving New York at 7:45 p. m., and will reach St. Louis at 2 a. m., connecting with the fast mail train south and west. The United States Express Co.'s business will be carried on these trains.

The Texas Ballroad Commissioners have concluded

business will be carried on these trains.

The Texas Railroad Commissioners have concluded that jobbers' rates made for the purpose of bolstering up the business of this or that merchant or city, are contrary to the spirit and text of the laws of the State of Texas, and they have announced that they intend to wipe them out and establish their regular mileage freight rates, except where wagon and water transportation and similar local conditions warrant the continuance of the discriminating rates.

similar local conditions warrant the continuance or the discriminating rates.

The Texas law requiring railroad companies to deliver freight at the price named in the bill of lading has been declared unconstitutional by the United States Supreme Court, so far as it applies to interstate shipments. The decision was delivered by Justice Brewer on April 29, the case being that of the Gulf, Colorado & Santa Fe against Heffley & Lewis. The decision naturally follows from the provision in the Interstate Commerce law which forbids a road to charge more or less than the published tariff rate.

#### Chicago Traffic Matters

Chicago Traffic Matters.

CHICAGO, May 1st, 1895.

Eastbound traffic again showed an increase last week, which would seem to indicate, in the absence of any other reason, that the advanced rates were not scrupulously maintained even by the Chicago roads.

A good demand for boats for the grain carrying trade has stiffened prices, and the rate on wheat and corn advanced to 1½ cents a bushel this week.

Chairman Caldwell, at the request of the Chicago, St Paul, Minneapolis & Omaha, rules that owing to the failure to adopt any rules under the present agreement, there is no provision in force for the redemption of such tickets by issuing lines is entirely a matter of courtesy.

Central Traffic Association roads have revised the rules to govern the sale of excursion tickets for the Christian Endeavor Convention at Boston, July 10-14, and have agreed that round-trip tickets, limited to July 22, will be sold at one fare for the round trip, going and returning by the same route. For variable routes the rate is to be 60 per cent. of the sums of the recognized rates of the routes traveled. Tickets must be used through to Boston not later than July 12, and between July 22 and 31 may be renewed on application to the joint agent at Boston.

One of the disturbing factors in the Western freight

may be renewed on application to the joint agent at Boston.

One of the disturbing factors in the Western freight rate situation for some time has been the excessive divisions allowed the Kansas City, Osceola & Southern, and the Kansas City, Pittsburgh & Gulf roads. Commissioner Midgely, acting under authority of the executive committee, has now given notice of a reduction in the proportion of rates to be allowed these roads, which it is expected will materially improve the situation. While there is little doubt that these roads are responsible for some of the disturbances, the general impression is that what may be an effort to make them scapegoats for some of the larger lines will not relieve the tension in other directions. As I have all along maintained, the situation is extremely critical, and nothing except the reluctance of the individual members to assume the responsibility of a general rate war prevents one or two of the lines from openly meeting rates which they are satisfied are being made by their competitors.

Western passenger lines have made no material progress during the past week in the formation of their new association. Each road is apparently doing about as it pleases.

association. Each road is apparently doing about as it pleases.

There seems to be good reason to believe that the roads leading east from Peoria and St. Louis are still keeping in effect the reduced rates made prior to the recent agreement of the Eastern lines to advance all eastbound rates. If this proves true, there is little hope for maintained rates via Chicago for any length of time.

The Western lines have as yet issued no through tariffs in connection with lake lines. One or two of the roads have issued individual tariffs with the lake lines, but the failure of the Chicago roads and the Lake Michigan lines to agree upon satisfactory divisions via the Mississippi River crossings results in the Western lines charging local rates to Chicago, and adding the lowest lake rates obtainable. It is probable that an agreement will be reached soon, and the Western lines will then issue joint tariffs,

reached son, and the westernmes will challes be just tariffs, Crop prospects in the West are unusually flattering, and if the crops materialize, all the roads will be able to recoup themselves for the scanty tonnage now being moved.

Another attempt was made last week to bring about an agreement between the Eastern and Western lines for a division of through rates on Western bound transcontinental traffic, but without result, and the Eastern lines will continue to charge local rates to their Western termini.

will continue to change minin.

The shipments of eastbound freight, not including live stock, from Chicago, by all the lines for the week ending April 27, amounted to 61,408 tons, against 61,004 tons during the preceding week, an increase of 404 tons, and against 57,289 tons for the corresponding week last year. The proportions carried by each road were:

Roads.	WEEK TO APRIL 27.		WEEK TO APRIL 20.	
	Tons.	р. с.	Tons.	р. с.
Michigan Central	9,483 5,101	15.4 8.3	13.618 6. 74	21.4
Wabash Lake Shore & Mich. South.	7,973	13.0	6,196	10.1
Pitts., Ft. Wayne & Chicago Pitts., Cin., Chi. & St. Louis.	12,005 5,634	19.5	9,214 5 58)	15.1
Baltimore & Ohio	2 356	3.8	2,124	3.5
Chicago & Grand Trunk	3,712	6.1	4,998	8.2
New York, Chic. & St. Louis	6,008 7,454	9.8	4,081 8,363	6.7
Chicago & Erie C., C., C. & St. Louis	1,672	2.8	1,256	2.0
Totals	61,408	100.0	61,004	100.0

Of the above shipments 7,152 tons were flour, 26,944 tons grain and mill stuff, 9,373 tons cured meats, 7,162 tons dressed beef, 1,584 tons butter, 983 tons hides, and 6,655 tons lumber. The three Vanderbilt lines carried 38,2 per cent., the two Pennsylvania lines 28.7 per cent.